

## **ELEMENT THREE: DATABASE**

### **3.1 INTRODUCTION**

The development of SANS 2000 considers extensive volumes of data from various sources. The compilation of an effective database is a key element in preparing SANS 2000. To determine the aviation needs and subsequent improvement/new projects to fulfill those needs, a comprehensive set of statistics must be analyzed. It is necessary to sort through a variety of data and extract the relative facts that impact aviation in Arizona. The extracted data can then be utilized to compile each of the different elements in the SANS.

A great deal of data was collected and abridged during the Arizona SANS 1995 preparation. Much of the SANS 2000 effort has been directed toward updating this existing database as opposed to creating a new one. For the most part the objective of the data collection was to provide new baseline numbers for various criteria and to obtain any projected information up to the year 2020.

The SANS 1995 data was generally segregated into six categories. SANS 2000 has retained this previous formatting. The data categories are:

- Socioeconomic
- Environment and Land Use
- Surface Transportation
- Aviation
- Finance
- Study Survey Results

Sources that have been used in the data collection effort include the Federal Aviation Administration (FAA), the Arizona Department of Transportation (ADOT), the Arizona Department of Economic Security, regional airport system plans, various airport master plans, and other published reports. Another significant source of information includes questionnaires submitted to pilots, aircraft owners, airport sponsors, airlines and local chambers of commerce. Specific sources are identified with each data table.

The following sub-sections are presented to summarize the general findings of the SANS database update.

### **3.2 SOCIOECONOMIC**

Population trends, employment characteristics, and personal income levels are generally referred to as socioeconomic factors. These factors have significant impact on aviation as many facets of aviation are driven by the economic situation at a given time. An improved economic situation, both at the personal and business level, is directly related to increased aviation usage. A stagnant or declining economic picture will tend to result in less air travel and system usage. Increased usage creates the need for improvements to existing facilities and the consideration of new facilities to meet the demand. Decreased demand observably has the reverse effect. While the correlation between socioeconomic issues and aviation may not always be directly proportional,

it is an important driving element. Each of the key socioeconomic factors is discussed in detail in the subsequent paragraphs.

## Population

Arizona's population continues to be one of the fastest growing in the nation. In the period between 1960 and 1998, the population of Arizona more than tripled. Projections indicate that between 1998 and 2020 the population will almost double again from the current 4.7 million to an estimated 7.3 million residents. Growth of this nature will no doubt require supplemental aviation services.

The population growth in Arizona continues to be heavily centered in Maricopa and Pima Counties. Maricopa County is routinely considered one of the fastest growing counties in America. Statistics from 2000 indicate that 60% of the Arizona population resides in Maricopa County, of which Phoenix is the county seat. Residents of Pima County, for which Tucson is the county seat, account for another 16% of the state's population. Forecasts suggest that these areas will remain the major population centers for the state.

Table 3-1 illustrates Arizona's historical population on a county-by-county basis from 1960 to 1990. Table 3-2 illustrates the population forecasts for 1998, 1999 and 2000 and then in five-year increments thereafter through the year 2020.

**TABLE 3-1: Arizona Historical Population 1970 to 2000**

County	1970	1980	1990	2000
Apache	32,118	52,108	61,591	69,423
Cochise	63,910	85,686	97,624	117,755
Coconino	48,326	75,008	96,591	116,320
Gila	28,885	37,080	40,216	51,335
Graham	16,578	22,862	26,554	33,489
Greenlee	10,330	11,406	8,008	8,547
La Paz	-	12,557	13,884	19,715
Maricopa	971,228	1,509,262	2,122,101	3,072,149
Mohave	25,857	55,865	93,497	155,032
Navajo	47,715	67,629	77,658	97,470
Pima	351,667	531,443	666,880	843,746
Pinal	67,916	90,918	16,379	179,727
Santa Cruz	13,966	20,459	29,676	38,381
Yavapai	36,733	68,145	107,714	167,517
Yuma	60,727	76,205	106,895	160,026
<b>TOTAL</b>	<b>1,775,956</b>	<b>2,716,633</b>	<b>3,565,258</b>	<b>5,130,632</b>

Note: Until 1980, La Paz was part of Yuma County.

Population figures are as of April 1 for years reported. Numbers may not sum due to differences between county figures and statewide figures.

Source: Arizona Department of Economic Security, April 1, 2000.

**TABLE 3-2: Arizona Forecast of Population 1998 to 2020**

County	1998	1999	2000	2005	2010	2015	2020
Apache	66,350	67,069	67,925	72,236	76,645	81,173	85,766
Cochise	123,750	120,179	121,837	129,680	137,035	143,793	149,990
Coconino	121,625	120,848	123,329	135,595	147,352	158,753	169,343
Gila	49,175	47,898	48,614	51,644	54,603	57,613	60,757
Graham	34,700	34,245	35,164	39,427	43,499	47,181	50,673
Greenlee	9,125	8,908	8,984	9,297	9,605	9,923	10,271
La Paz	19,000	19,821	20,341	22,799	25,096	27,193	29,078
Maricopa	2,806,100	2,879,492	2,954,157	3,329,561	3,709,566	4,101,784	4,516,090
Mohave	138,625	142,600	147,529	171,504	194,403	215,988	236,396
Navajo	92,500	87,775	88,898	94,395	99,979	105,843	111,946
Pima	823,900	836,153	854,329	943,795	1,031,623	1,119,342	1,206,244
Pinal	157,675	157,413	161,630	181,487	199,715	216,215	231,229
Santa Cruz	37,800	37,439	38,225	42,154	46,246	50,556	55,111
Yavapai	148,500	148,428	152,966	175,693	198,052	219,614	240,849
Yuma	135,200	134,719	138,025	154,582	171,689	189,783	209,861
<b>TOTAL</b>	<b>4,764,025</b>	<b>4,842,987</b>	<b>4,961,953</b>	<b>5,553,849</b>	<b>6,145,108</b>	<b>6,744,754</b>	<b>7,363,604</b>

Note: Projections subsequent to the 2000 Census were not available.

Source: Arizona Department of Economic Security, August, 1997.

## Employment

Arizona's recent employment history and the forecast for the immediate future portray a bright outlook. In 1998 Arizona added over 93,000 jobs, which correlates to a 4.8% increase in new jobs. In fact, Arizona's job growth rate ranked number one in the nation for seven out of the twelve months in 1998, while finishing second in the other five months. It is anticipated that over the next two years the state will add another 148,000 jobs, at a somewhat slower rate than the recent growth. Employment sectors with the best performance were manufacturing, construction, finance and real estate, transportation, utilities, and communication. A key sector among those sectors experiencing a downturn was the mining industry.

Since 1995 unemployment in the state of Arizona has hovered in the 4.0-5.5% range. The unemployment rate for 1998 was 4.1%, and numbers through May 1999 indicate it to be approximately 4.2%. While this is a desirable goal, continued lowering of the unemployment rate will normally result in some sort of labor shortage. With a labor shortage, economic growth will become inhibited as employers will not be able to find an adequately trained/skilled work force. Issues such as education and re-training of current employees and the utilization of personnel displaced as a result of corporate downsizing will become critical in maintaining an adequate workforce.

Table 3-3 depicts Arizona's recent historical employment data for the entire state and for the larger metropolitan areas of Phoenix and Yuma.

**TABLE 3-3: Arizona Historical and Forecast Employment**

County/Region	1980	1990	1997	1998	1999	2000
<b>Arizona</b>	<b>1,017,705</b>	<b>1,498,660</b>	<b>1,976,785</b>	<b>2,072,726</b>	<b>2,150,538</b>	<b>2,220,712</b>
Phoenix-Mesa	641,767	987,097	1,393,530	1,467,766	1,530,048	1,580,155
Tucson	178,198	246,827	296,785	308,281	317,406	328,426
Yuma	N/A	39,000	50,158	52,839	52,966	52,415
Rest of State	197,740	225,736	236,312	243,840	250,118	259,716
Apache	13,101	14,194	17,097	18,745	19,546	18,575
Cochise	21,212	25,791	29,193	29,457	30,217	31,467
Coconino	28,265	39,812	46,763	46,987	48,327	51,040
Gila	11,556	11,244	13,473	13,596	13,573	13,645
Graham	4,842	5,710	6,172	6,162	6,440	6,510
Greenlee	3,838	2,929	4,502	4,337	3,975	4,453
La Paz	N/A	4,492	5,389	5,489	5,524	5,738
Maricopa	641,767	987,097	1,355,775	1,431,060	1,494,051	1,544,971
Mohave	15,495	26,549	34,797	35,912	37,773	39,591
Navajo	16,974	20,443	22,457	23,582	24,200	24,550
Pima	178,198	246,827	296,785	308,281	317,406	328,426
Pinal	26,037	33,323	37,755	36,707	35,997	35,184
Santa Cruz	7,576	10,614	11,250	11,287	11,516	11,906
Yavapai	16,892	27,492	42,618	45,030	45,782	48,166
Yuma	29,135	39,000	50,158	52,839	52,966	52,415
Undefined	2,099	3,142	2,601	3,257	3,245	4,075

N = Not Available

\*Undefined includes employment within the state not connected to individual counties or MSA's.

Source: U.S. Department of Labor – Bureau of Labor Statistics Database (1975-2000)

## Income

Coincident with the population increase, Arizona has seen a steady rise in per capita income (PCI). Historical data obtained through the Arizona Department of Economic Security shows a continuing growth trend throughout the State. While PCI growth is more noticeable in some areas of the state, no areas have seen decreases in PCI.

Table 3-4 illustrates historical PCI by county for the years of 1991-1997. Greenlee County has experienced the most significant increase in PCI during this period (\$13,572 to \$19,119 or 41%) while the PCI in Yuma County has seen the lowest increase (\$13,512 to \$15,629 or 16%). The PCI in Maricopa and Pima Counties have exhibited similar growth during this period (approx. 31% increase).

The succeeding Table 3-5 depicts the percent change in PCI by county for the same period, 1991-1997. Using the average of these percent changes, a projection through the year 2000 is also supplied. The projection assumes a continuous increase based on the average percent change for the years 1991-1997.

**TABLE 3-4: Arizona Per Capita Income 1991-1997 (in dollars)**

County/Region	1991	1992	1993	1994	1995	1996	1997
<b>Arizona</b>	16,971	17,583	18,270	19,127	20,078	21,071	21,998
Phoenix-Mesa	18,484	19,103	19,832	20,779	21,887	23,025	24,137
Apache	8,803	9,779	9,995	10,335	10,257	10,894	11,044
Cochise	13,556	14,351	14,647	14,739	15,088	15,984	16,532
Coconino	13,804	14,793	15,199	15,942	16,704	17,608	18,180
Gila	13,375	14,003	14,795	15,437	15,338	16,290	16,569
Graham	10,326	10,957	11,239	11,834	11,919	12,518	12,835
Greenlee	13,572	14,592	14,845	15,369	16,990	18,207	19,119
La Paz	15,258	15,351	17,279	16,538	17,175	18,125	19,352
Maricopa	18,799	19,430	20,151	21,145	22,274	23,435	24,601
Mohave	14,692	14,925	15,416	16,215	16,408	17,185	17,985
Navajo	10,030	10,682	10,787	11,216	11,493	11,947	12,166
Pima	16,337	16,942	17,756	18,684	19,375	20,375	21,068
Pinal	12,707	13,096	13,947	13,965	14,646	15,330	15,372
Santa Cruz	11,857	12,217	12,615	12,929	13,111	13,670	14,312
Yavapai	15,216	15,713	16,241	17,326	17,780	18,585	19,362
Yuma	13,512	13,803	14,538	14,334	16,889	15,511	15,629

Source:

1. Arizona Department of Economic Security, May, 1999

**TABLE 3-5: Arizona Historical Change in Per Capita Income 1991-1997 (in dollars)**

County/Region	1991-92 (%)	1992-93 (%)	1993-94 (%)	1994-95 (%)	1995-96 (%)	1996-97 (%)	2000 (Dollars)
<b>Arizona</b>	3.61	3.91	4.69	4.97	4.95	4.40	\$22,970
Phoenix-Mesa	3.35	3.82	4.78	5.33	5.20	4.83	\$25,235
Apache	11.09	2.21	3.40	-0.75	6.21	1.38	\$11,477
Cochise	5.86	2.06	0.63	2.37	5.94	3.43	\$17,091
Coconino	7.16	2.74	4.89	4.78	5.41	3.25	\$19,036
Gila	4.70	5.66	4.34	-0.64	6.21	1.71	\$17,176
Graham	6.11	2.57	5.29	0.72	5.03	2.53	\$13,311
Greenlee	7.52	1.73	3.53	10.55	7.16	5.01	\$20,250
La Paz	0.61	12.56	-4.29	3.85	5.53	6.77	\$20,159
Maricopa	3.36	3.71	4.93	5.34	5.21	4.98	\$25,730
Mohave	1.59	3.29	5.18	1.19	4.74	4.66	\$18,604
Navajo	6.50	0.98	3.98	2.47	3.95	1.83	\$12,566
Pima	3.70	4.80	5.23	3.70	5.16	3.40	\$21,981
Pinal	3.06	6.50	0.13	4.88	4.67	0.27	\$15,872
Santa Cruz	3.04	3.26	2.49	1.41	4.26	4.70	\$14,769
Yavapai	3.27	3.36	6.68	2.62	4.53	4.18	\$20,157
Yuma	2.15	5.32	-1.40	17.82	-8.16	0.76	\$16,059

Sources:

Arizona Department of Economic Security, May, 1999

### **3.3 ENVIRONMENT AND LAND USE**

#### **Physical Setting**

Arizona has the sixth largest land area (113,417 square miles) in the United States. It is bordered by the states of California, Nevada, New Mexico, and Utah, as well as the country of Mexico. The state terrain is highlighted by large desert areas, high mountainous regions, numerous mesas and buttes, and an array of canyons. This varied terrain creates lengthy surface transportation routes, thereby further substantiating the need for a more than adequate aviation system.

The climate in Arizona varies along with the terrain. From the hot and arid conditions in the southwest part of the state to the cool and moist conditions at the higher elevations, climate changes are an important consideration in the aviation needs assessment. Such issues as pavement design, takeoff and landing distances, and navigational aids can all be impacted by these drastic climatic differences.

#### **Land Use**

A large portion of the state is uninhabited and undeveloped. The focus of the state's economic activity and population is centered in two metropolitan areas: Phoenix and Tucson. Several smaller urban communities are scattered throughout the state and support various mining, military, agricultural and recreational activities. Communities fitting this category include Douglas-Bisbee, Flagstaff, Lake Havasu City, Prescott, Sierra Vista, and Yuma. Numerous Native American reservations are present in the state. Exhibit 3-1 shows the predominant land use patterns in Arizona.

Note: The "Urbanized Areas" as defined by the 1990 census are Flagstaff, Phoenix, Tucson, and Yuma.

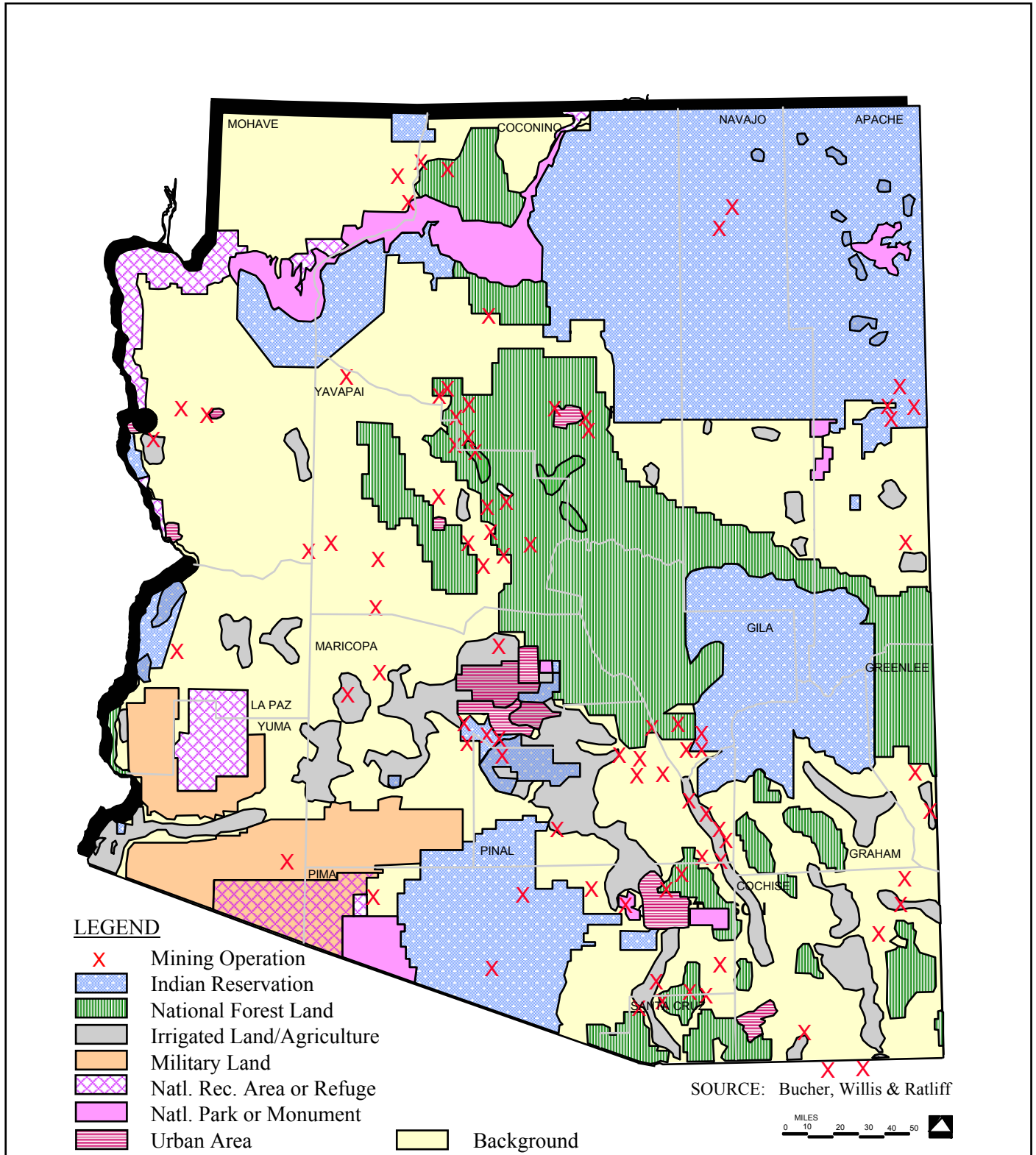
#### **Land Use Ordinances**

Table 3-6 lists the existing land use ordinances relative to aviation development in the state. As shown, several Arizona counties have enacted some sort of ordinance that must be considered for system improvement.

### **3.4 SURFACE TRANSPORTATION**

#### **Highway System**

According to the 1998 Arizona State Highway System Status and Condition Report, the Arizona system route has 6,142 miles and a lane mileage of 15,895. There are 4,169 bridges on the system. The state is navigated by four major interstates, two smaller interstate sections, and a vast array of state highways. A complex freeway system is also in place in the larger metropolitan areas of the state. Exhibit 3-2 illustrates the existing system.

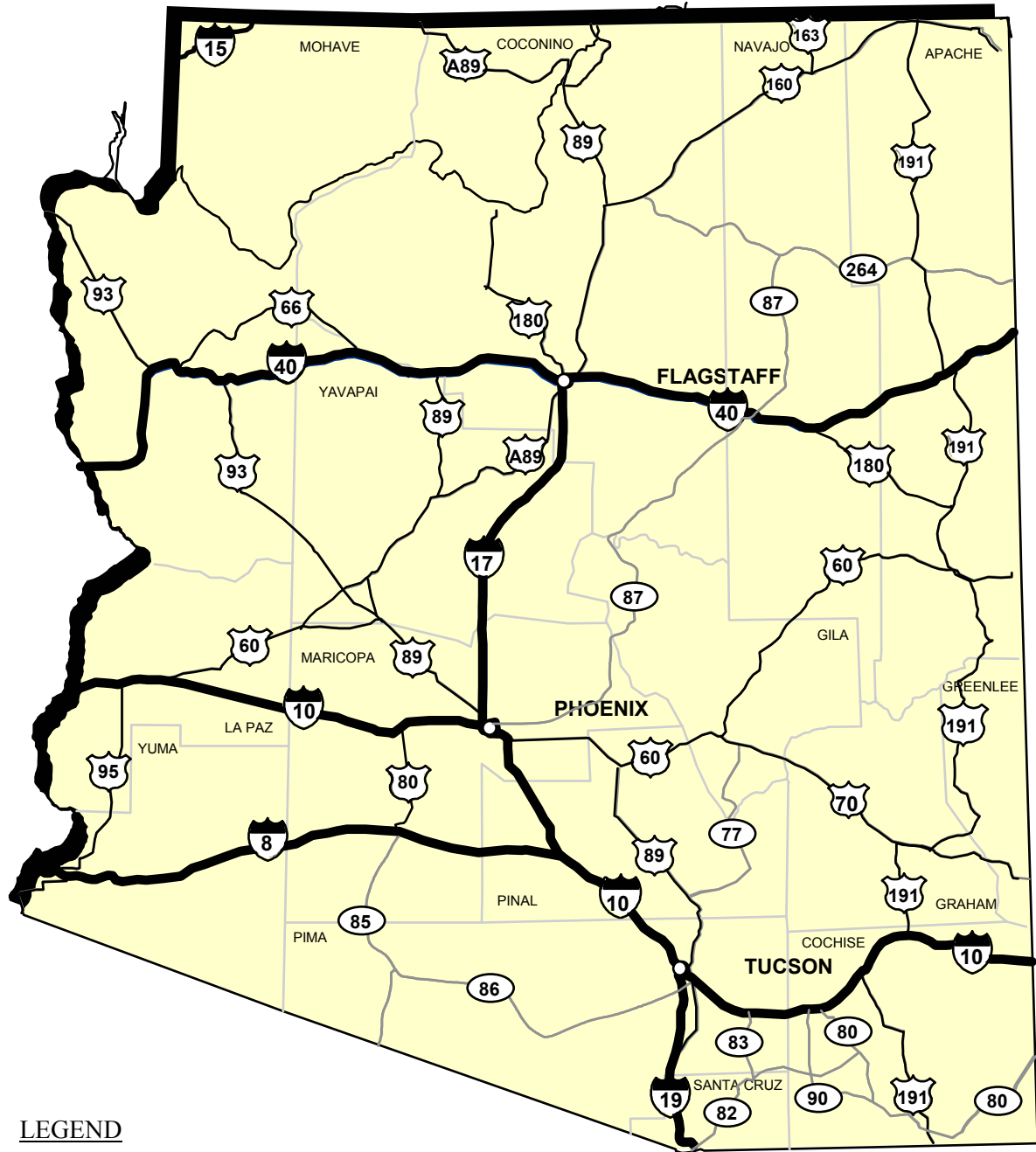
**EXHIBIT 3-1: Predominant Land Uses**




**TABLE 3-6: County Ordinance Review Summary**

COUNTY	ORDINANCES
Apache	County has regulations which govern only typical land use zoning practices.
Cochise	County-wide height hazard zoning.
Coconino	No active county-owned airport.
Gila	Only typical zoning.
Graham	Only typical zoning.
Greenlee	County has traditional height hazard zoning for Greenlee County Airport.
La Paz	Controls both height of structures and land use. Land use based on noise contours, modeled after military ordinance
Maricopa	County has military base land use zoning ordinance. County has height and hazard zoning adopted for military bases.
Mohave	The county has an Airport District zone which addresses both height of structures and land use.
Navajo	Controls height of structures along center line of runway.
Pima	Overlay zoning for height and land use zoning.
Pinal	The county has no ordinances or regulations regarding the control of object height or land use compatibility.
Santa Cruz	County is in process of developing an Airport Master Plan and County Development Code.
Yavapai	County is in process of reviewing and adopting proposed ordinances.
Yuma	City and County zoning essentially the same. Both height hazard and land use compatibility.

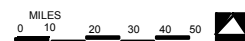
Source: Arizona Airport Land Use Compatibility Study, 1992, ADOT Aeronautics



**EXHIBIT 3-2: State Highway System****LEGEND**

-  Interstate Highways
-  U.S. Highways
-  State Highways

SOURCE: Arizona State Highway Maps



## **Rail**

There are numerous main rail lines navigating the state as well as multiple branch lines connecting to these. Amtrak is the only company offering passenger rail service in the state. Amtrak does not own rail lines in the state; they merely utilize the lines of others that provide cargo service. Several other companies offer such cargo service.

There are two basic passenger routes offered by Amtrak. One route runs through Kingman, Flagstaff, and Winslow in both directions. This is part of the Southwest Chief route that runs from Los Angeles to Chicago through Albuquerque. The other route goes through Yuma, Tucson and Benson, again in both directions. It is part of the Sunset Limited that goes from Los Angeles to San Antonio, then to New Orleans and on to Orlando. Amtrak also provides a connecting service between Flagstaff and Phoenix to facilitate passenger travel between the two routes.

Amtrak railroad stations are present in the following locations in Arizona.

- Benson
- Camp Verde
- Flagstaff
- Grand Canyon
- Kingman
- Lake Havasu
- Munds Park
- Phoenix Amtrak Station
- Phoenix North
- Phoenix Sky Harbor Airport
- Tucson
- Williams
- Williams Junction
- Winslow
- Yuma

A recreational rail system is also offered for round-trip service between Williams and the Grand Canyon.

## **Bus Service**

Bus service, while offered by a variety of carriers, is not widely used in the state. The geographic isolation in some portions of Arizona make establishing routine service to these locations cost-prohibitive. Numerous charter operators provide service for tour groups and, in the larger metropolitan areas of Phoenix and Tucson, mass transit by bus is provided. Greyhound fills the need for state-to-state travel by bus to and from Arizona.

The Maricopa Association of Governments (MAG) Regional Public Transportation Authority makes available to Phoenix and Maricopa County a bus service area of 585 square miles. This service area includes some 56 local routes that allow almost 85% of the Maricopa County population to live within one mile of an established bus route.

Sun Tran is the primary provider of public transportation in the Tucson area. Sun Tran operates almost 40 routes that cover approximately 240 square miles. The average daily passenger volume for Sun Tran is approximately 60,000.

As mentioned, several small urban and rural transit entities provide service on fixed routes to other areas of the state. Their overall service is limited in nature, but they still provide key transport mechanisms to these under served locations.

### **3.5 AVIATION**

Aviation is more important in Arizona relative to other states for a few reasons. Key among these are the following:

- A very large tourist population that travels primarily by air
- A vast expanse of area much of which is isolated by its landscape
- Ideal flight weather conditions for 98% of the year that increase usage

The aviation industry continues to be one of the fastest growing components of the Arizona economy. The estimated economic impact of aviation in Arizona for 1997-98 was over \$15 billion dollars. The industry employed 167,325 people in that same period. Its \$4.3 billion dollar payroll was also a major component for the state.

Given Arizona's burgeoning economy and population, aviation can only continue to thrive. Global economics and the need for businesses to maintain a fast, competitive pace will be driving factors for the aviation industry. Transportation speed capabilities in our technologically advanced world will feed the need for instant gratification. Aviation is the only mode that can optimize that benefit.

The state's aviation system can generally be organized in the following manner:

- Aviation Facility Classification
- Airport Facilities
- Heliport Facilities
- Seaplane Facilities
- Air Carrier Activity
- Scheduled Airline Routes
- Air Taxi
- General Aviation
- Rural Health Care Delivery/Air Ambulance Service
- Military
- Airspace and NAVAIDS

#### **Aviation Facility Classifications**

Arizona has a variety of aviation facilities. Some are small rural unpaved airstrips serving isolated portions of the state. Some are busy rooftop heliports facilitating the needs of corporate America. Others are large, long-haul commercial service airports moving people and cargo back and forth. Because of this diversity of facilities with broad ranges of operating parameters and design standards, a means of facility classification is necessary.

Four basic aviation facility classifications are used by the FAA and the Arizona Department of Transportation. The first is a classification system, mentioned in Element One, utilized in the National Plan of Integrated Airport Systems (NPIAS). The second is a coding system used by the FAA to relate airport design criteria to the operational and physical characteristics of the

airplanes operating at an airport. The third is a hierarchical classification used by the Arizona Aeronautics Division that segregates the state's airports into a Primary System, a Secondary System, and Other Airports. The fourth was developed by the ADOT, based on former FAA airport classification categories, to assist in setting minimum development standards and planning guidelines for airport facility development in the state.

### **National Plan of Integrated Airport Systems (NPIAS)**

The NPIAS is a national airport system plan developed by the FAA to indicate aviation facilities of national significance. NPIAS airports are eligible for federal grants for airport planning and various capital improvements. The NPIAS defines an airport's status by its service level. The service level of an airport reflects the type of public service the airport provides to the community. The service level also reflects the funding categories established by Congress to assist in airport development. These categories are:

- ✦ **Primary Service (PR)** – Primary Service airports are public use airports receiving scheduled airline passenger service which also enplane 10,000 or more passengers per year.
- ✦ **Commercial Service (CM)** - Commercial Service airports are public use airports which receive scheduled airline passenger service and which annually enplane 2,500 or more passengers.
- ✦ **General Aviation (GA)** – General Aviation airports are either publicly or privately owned, public use airports which serve general aviation needs.
- ✦ **Reliever (RL)** – Reliever airports are general aviation or commercial service airports which have the function of relieving congestion at a Primary Service airport and which provide the general aviation user or small commercial operator with an alternative for access to the overall community. Reliever airports receive higher priority for funding assistance than other general aviation or commercial service airports.

### **Airport Reference Code (ARC)**

The ARC is a coding system developed by the FAA used to relate airport design criteria to the operational and physical characteristics of the airplanes intended to operate at an airport. The ARC has two components related to the airport design aircraft. The first component, depicted by a letter, is the aircraft approach category and relates to aircraft approach speed. These aircraft categories are as follows:

- Category A: Speed less than 91 knots.
- Category B: Speed 91 knots or more, but less than 121 knots.
- Category C: Speed 121 knots or more, but less than 141 knots.
- Category D: Speed 141 knots or more, but less than 166 knots.
- Category E: Speed 166 knots or more.

The second component, depicted by a Roman numeral, is the airplane design group and relates to airplane wingspan. This grouping links an airport's dimensional standards to aircraft wingspans. The categories are as follows:

- Design Group I: Wingspan up to but not including 49 feet.
- Design Group II: Wingspan 49 feet up to but not including 79 feet.
- Design Group III: Wingspan 79 feet up to but not including 118 feet.
- Design Group IV: Wingspan 118 feet up to but not including 171 feet.
- Design Group V: Wingspan 171 feet up to but not including 214 feet.
- Design Group VI: Wingspan 214 feet up to but not including 262 feet.

Generally, aircraft approach speed applies to runways and runway related facilities. Airplane wingspan primarily relates to separation criteria involving taxiways and taxilanes.

Airports expected to accommodate single-engine airplanes normally fall into Airport Reference Code B-I. Airports serving larger general aviation and commuter-type planes are usually Airport Reference Code B-II or C-II. Small to medium-sized airports serving air carriers are usually Airport Reference Code C-III, while larger air carrier airports are usually Airport Reference Code D-VI.

### **Primary and Secondary Airport Classifications**

Arizona State's aviation system is segregated by the ADOT, Aeronautics Division into two subsystems ~ a Primary system and a Secondary system category. System airports are divided into these two categories primarily by size and usage. In order for an airport to be included under the primary system, it must be open to the public and meet at least one of the following criteria:

- Have 10 or more based aircraft and/or 2000 or more yearly operations; or
- Have scheduled air carrier service; or
- Receive commuter service regularly; or
- Projected to meet any of the above criteria within 10 years.

Primary system airports serving scheduled air carrier service must be certified under Federal Aviation Regulation Part 139 (Certification and Operations: Land Airports Serving Certain Air Carriers).

There are 62 airports included in the Primary Airport System based on ADOT Aeronautics Division's 1999 records. Secondary airports are different in character from the State's Primary airports. Since these airports are normally located in rural areas, population size does not generate sufficient aviation activity to warrant the level of airport facilities generally associated with Primary airports. Secondary airports do provide facilities that can be utilized by single-engine and light-twin aircraft (e.g., FAA Stage I type aircraft). These Secondary airports are not designed to serve business jets, heavy twin-engines, large commuter aircraft, or commercial airlines.

The State's definition of a Secondary airport is one that satisfies both of the following criteria: (1) recognized by the FAA as an airport per Form 5010, and (2) open to the public. There are 20 Secondary airports identified in the 1999 Fiscal Year listing.

Previously, a category of airports called Emerging Rural Airports were included by ADOT as part of the State's system of airports that did not meet the requirements of either a Primary or Secondary facility, but existed in areas that were not adequately served by aviation facilities. The concept of Emerging Rural Airports was described in detail in a special study of Secondary, Native American, and Other Rural Airports produced by ADOT in 1988. This special study identified nine airports as potential State aviation network facilities. This category of airport is no longer identified as a special category in the Arizona Aviation system.

## **Airport Categories**

The following definitions are applicable to the State Primary and Secondary Systems.

1. Commercial Service Airport: a publicly owned airport which enplanes 2,500 or more passengers annually and receives scheduled passenger air service.
2. Reliever Airport: an airport that serves as a "relief of General Aviation traffic congestion for a Commercial Service airport, providing more general aviation access to the overall community. The Reliever Airport should have a current or forecast activity level of 50 based aircraft and a minimum of 25,000 annual itinerant operations (or 35,000 local operations).
3. General Aviation Airports: the remaining airports that do not fall into either the Commercial Service or Reliever status are referred to as General Aviation airports. This category includes privately owned and/or private use airports/heliports. For system planning purposes, the General Aviation Airports may be divided into the following types:
  - a. Community Airport: an airport within the State of Arizona serving an incorporated community with a population more than 1,000 people.
  - b. Rural Airport: an airport within the State of Arizona serving an incorporated community with less than 1,000 population.
  - c. Emergency Airport: an airport/facility or area within the State of Arizona that currently has, or can demonstrate, a need for an emergency or "air evacuation" airport. These airports may serve general aviation, recreation, and/or emergency services.
4. New Urban Airport: the construction of a new airport within 24 statute miles of the Urbanized Area Boundary of Phoenix, Tucson, Yuma, and Flagstaff requires the approval of the State Transportation Board (A.R.S. 28-8205).

## **Airport Facilities**

This section provides a summary of existing aviation facilities in the state. Facilities included in this section include all public-use facilities regardless of ownership. Arizona's system of public-use airports is very comprehensive. Airports are among the most heavily used means of public transportation throughout the state. Maintaining and updating the aviation system is a critical element to effectively fulfill the transportation needs of Arizona.

The subsequent series of maps and tables on the next few pages to summarize the available aviation resources. Exhibit 3-3 and Table 3-7 shows the State's public-use airport system, both commercial and general aviation. Military airports that are publicly owned but restricted in use are also depicted. Exhibit 3-4 illustrates only Arizona's Primary airports while Exhibit 3-5 presents only the Secondary airport system.

A summary of existing airfield facilities that lists runway data and taxiway information is provided as Table 3-8. Existing airport lighting and terminal navigational aids are detailed in Table 3-9.

### **Heliport Facilities**

Helicopters provide a vital resource to the aviation system, particularly for the corporate and medical communities in Arizona. There are well over 100 heliports located throughout the state. The vast majority are privately owned with restricted use. Some facilities are publicly owned, (Glendale Heliport and Helistop, Mesa Heliport) but required prior permission in order to use the facility. In addition to the numerous heliports, many airports have routine helicopter service.

Helicopters are also a key element in the tourist industry. Numerous flights are available in the Grand Canyon and Sedona areas. Most of these operate out of the Grand Canyon National Park and Sedona Airports.

### **Seaplane Facilities**

Seaplane facilities are of two types: seaplane bases and seaplane landing areas. Seaplane bases have a resident operator who provides commercial services such as flight instruction, sight seeing flights, aviation fuel, and /or aircraft maintenance. Seaplane landing areas are designated bodies of water on which seaplanes can operate but where no seaplane-specific facilities are available.

The following are seaplane facilities in Arizona.

#### Cocoino National Forest

- Mormon Lake, Flagstaff, AZ
- Lake Mary, Flagstaff, AZ
- Upper Lake Mary, Flagstaff, AZ

#### Tonto National Forest

- Roosevelt Lake, Roosevelt, AZ

#### U.S. National Park Service

- Lake Mead, Temple Bar, AZ
- Lake Mohave, Bullhead City, AZ

#### Glen Canyon National Recreation Area

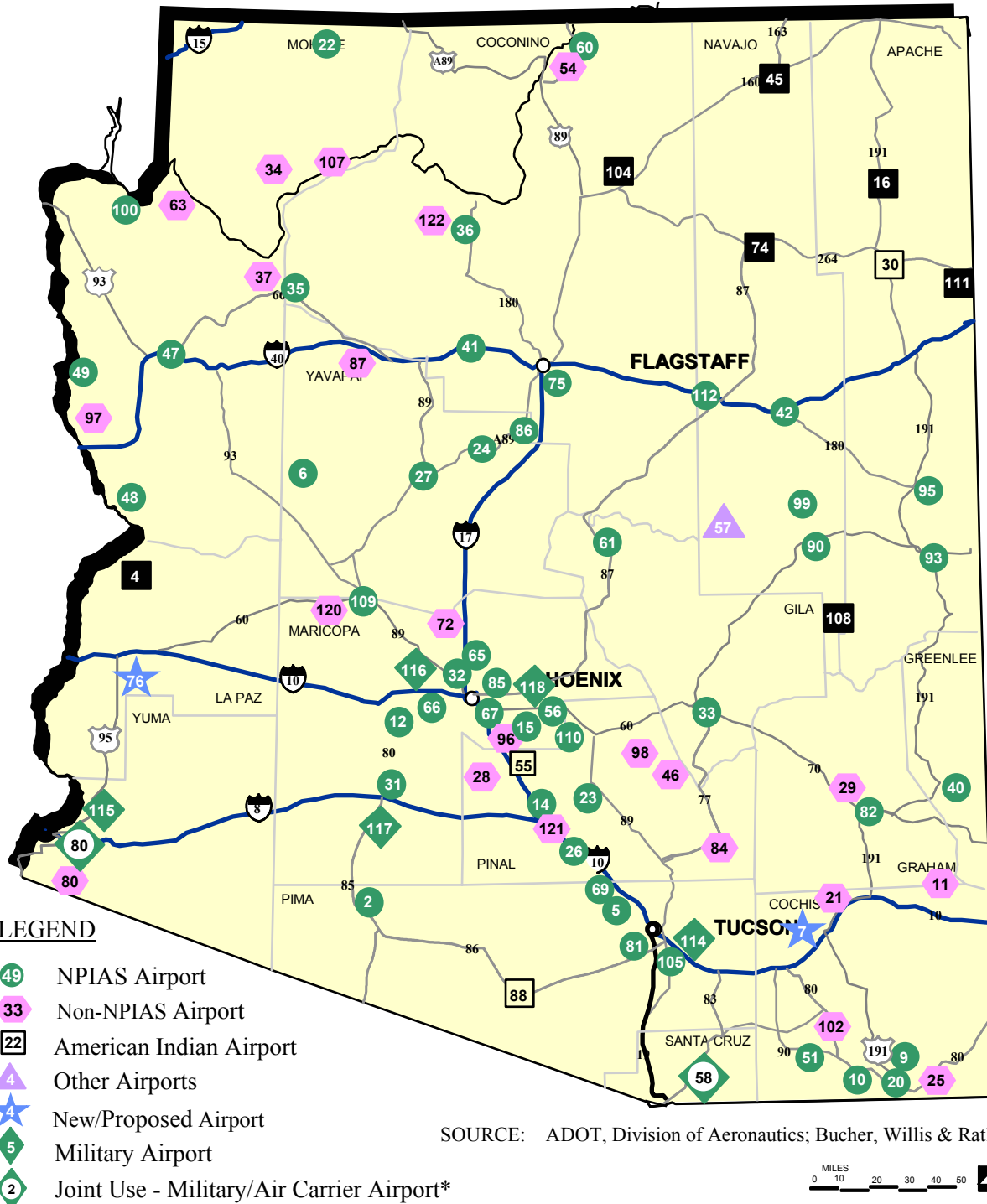
- Lake Powell

#### Lake Havasu City

- Lake Havasu, Lake Havasu City, AZ

**EXHIBIT 3-3: Existing Arizona State Public Use Airport System - 2000**

NOTE: \* Phoenix-Sky Harbor, Tucson International and Libby AFB are currently used by the Arizona Air National Guard (AANG).





**TABLE 3-9: Listing of Public Use Airports**

Legend		
1. Ak-Chin Community (1)	39. Greasewood (3)	77. Rio Vista Hills (1)
2. Ajo Municipal	40. Greenlee County	78. Rock Point (1)
3. Apache Junction *	41. H.A. Clark Memorial Field	79. Rocky Ridge (1)
4. Avi Suquilla	42. Holbrook Municipal	80. Rolle Airfield
5. Avra Valley (Marana Reg'l)	43. Hualapai (1)	81. Ryan Field
6. Bagdad	44. Inscription House (3)	82. Safford Regional
7. Benson Municipal	45. Kayenta	83. Sampley (1)
8. Big Lake/Sunrise (2)	46. Kearny	84. San Manuel
9. Bisbee Douglas International	47. Kingman	85. Scottsdale
10. Bisbee Municipal	48. Lake Havasu City Municipal	86. Sedona
11. Bowie	49. Laughlin/Bullhead Int'l	87. Seligman
12. Buckeye Municipal	50. Leupp/Painted Desert (3)	88. Sells
13. Camp Verde (3)	51. Sierra Vista Muni/Libby AAF	89. Shonto (1)
14. Casa Grande Municipal	52. Low Mountain (3)	90. Show Low Municipal
15. Chandler Municipal	53. Lukachukai (1)	91. Sky Ranch Carefree (1)
16. Chinle Municipal	54. Marble Canyon	92. Somerton Field (1)
17. Chiricahau Mountains (2)	55. Memorial Airfield (1)	93. Town of Springerville Municipal
18. Cibola (2)	56. Falcon Field	94. Sprucedale (2)
19. Cliff Dwellers Lodge (1)	57. Mogollon Airpark (1)	95. St. Johns Industrial Airpark
20. Cochise College	58. Nogales International	96. Stellar Airpark
21. Cochise County	59. Ora Acres (3)	97. Sun Valley
22. Colorado City Municipal	60. Page Municipal	98. Superior Municipal
23. Coolidge Municipal	61. Payson	99. Taylor
24. Cottonwood Municipal	62. Peach Springs *	100. Temple Bar
25. Douglas Municipal	63. Pearce Ferry	101. Three Point (3)
26. Eloy Municipal	64. Petrified Forest (3)	102. Tombstone Municipal
27. Ernest A. Love Field	65. Phoenix Deer Valley	103. Toyey School *
28. Estrella Sailport	66. Phoenix Goodyear	104. Tuba City
29. Flying J Ranch	67. Phoenix Sky Harbor Int'l	105. Tucson International
30. Ganado	68. Pearce Ferry	106. Tucson Mercury (3)
31. Gila Bend Municipal	69. Pinal Airpark	107. Tuweep
32. Glendale Municipal	70. Pine Springs (1)	108. Whiteriver
33. San Carlos Apache	71. Pinon (1)	109. Wickenburg Municipal
34. Grand Canyon Bar-Ten	72. Pleasant Valley	110. Williams Gateway
35. Grand Canyon Caverns	73. Pleasant Valley Airstrip (1)	111. Window Rock
36. Grand Canyon National Park	74. Polacca	112. Winslow Lindberg Regional
37. Grand Canyon West	75. Flagstaff-Pulliam	113. Yuma International/MCAS Yuma
38. Grapevine/Roosevelt Lake (1)	76. Quartzsite *	119. Alamo Lake (2)
		120. Forepaugh
		121. Grande Valley
		122. Valle Airport
	<b>MILITARY:</b>	
	114. Davis-Monthan AFB	
	115. Laguna AAF	
	116. Luke AFB	
	117. Gila Bend-AF Aux.	
	118. Papago AAF	

Airport candidates no longer viable and dropped from study = \*

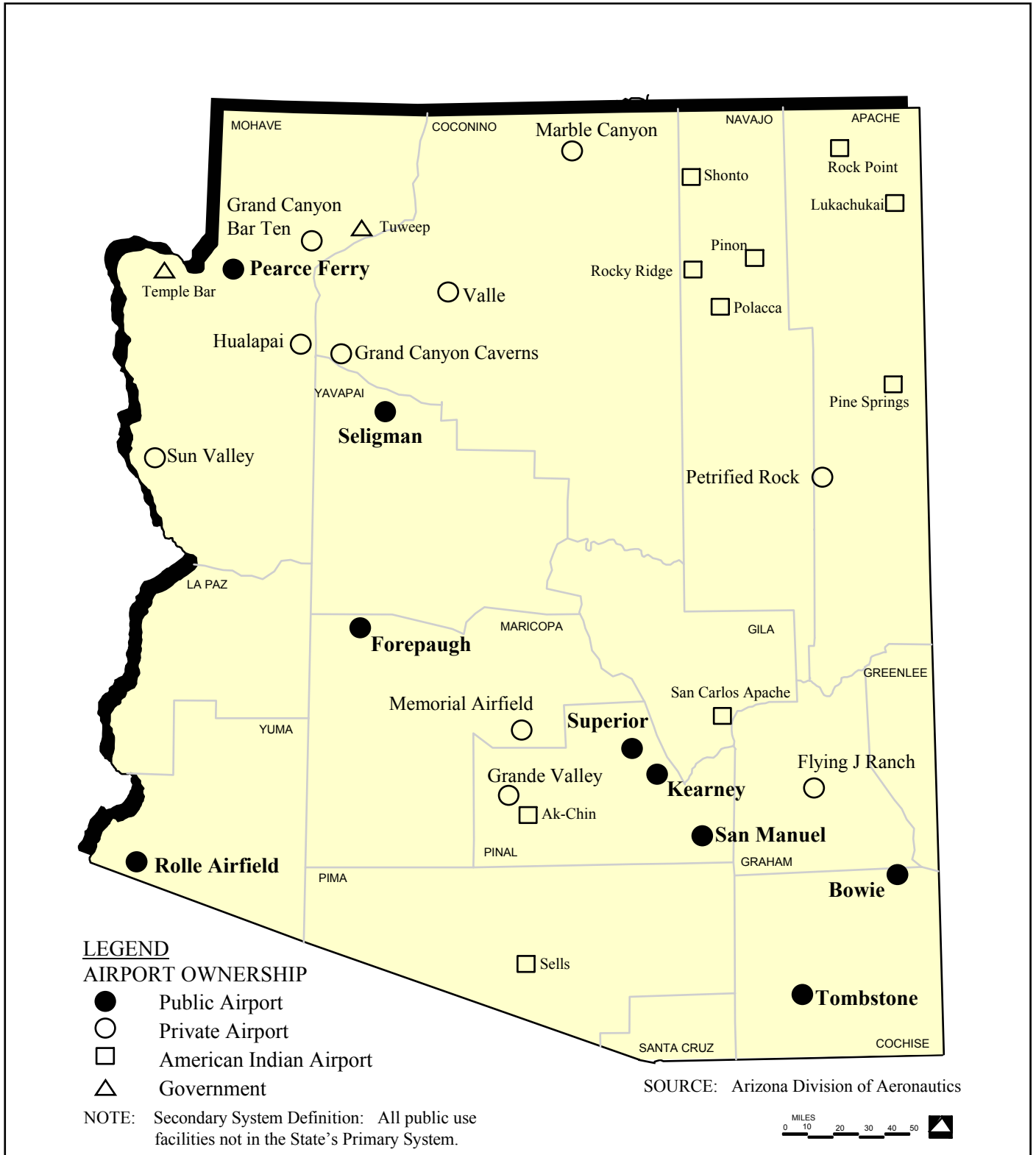
Airports that are active, private use airports = (1)

Recreational Study Airports, dropped from the SANS = (2)

Airports that have been closed/abandoned = (3)

Airports not included in Exhibit 3-3

**EXHIBIT 3-4: Arizona State Primary Airport System**

**EXHIBIT 3-5: Arizona State Secondary Airport System**

**TABLE 3-8: Existing Facilities**

AIRPORT NAME	Elev. MSL [ft.]	Runway	Length [ft.]	Width [ft.]	Surface	Strength (1000) lbs.	Parallel Taxiway	ASV
Ajo Municipal	1458 <sup>5</sup>	12-30 <sup>5</sup>	3800 <sup>5</sup>	60 <sup>5</sup>	Asphalt <sup>5</sup>	12.5-S <sup>5</sup>	No <sup>4</sup>	175,000 <sup>1</sup>
Avi Suquilla (NA)	452 <sup>8</sup>	01-19 <sup>5</sup>	4780 <sup>5</sup>	75 <sup>5</sup>	Asphalt <sup>5</sup>	20-S <sup>5</sup>	Full <sup>4</sup>	175,000 <sup>1</sup>
Bagdad Airport	4183 <sup>5</sup>	05-23 <sup>5</sup>	4575 <sup>5</sup>	60 <sup>5</sup>	Asphalt <sup>5</sup>	4-S <sup>5</sup>	No <sup>4</sup>	143,300 <sup>1</sup>
Benson	4183 <sup>5</sup>	05-23 <sup>5</sup>	4575 <sup>5</sup>	60 <sup>5</sup>	Asphalt <sup>6</sup>	13-S <sup>5</sup>	No <sup>5</sup>	123,284 <sup>2</sup>
Bisbee Douglas Int'l*	4154 <sup>5</sup>	08-26 <sup>5</sup>	7002 <sup>5</sup>	75 <sup>5</sup>	Asphalt <sup>5</sup>	30-S <sup>5</sup> 95-D <sup>5</sup> 155-DT <sup>5</sup>	No <sup>4</sup>	325,360 <sup>1</sup>
		17-35 <sup>5</sup>	7311 <sup>5</sup>	150 <sup>5</sup>	Asphalt <sup>5</sup>	30-S <sup>5</sup> 160-D <sup>5</sup> 250-DT <sup>5</sup>	Partial <sup>9</sup>	
Bisbee Municipal*	4780 <sup>5</sup>	17-35 <sup>2</sup>	5929 <sup>2</sup>	60 <sup>5</sup>	Asphalt <sup>5</sup>	12.5-S <sup>5</sup>	Full <sup>4</sup>	147,600 <sup>1</sup>
		02-20 <sup>2</sup>	2650 <sup>2</sup>	110 <sup>5</sup>	Dirt <sup>5</sup>	NA <sup>5</sup>	No <sup>4</sup>	
Bowie	3737 <sup>5</sup>	08-26 <sup>2</sup>	3925 <sup>2</sup>	70 <sup>2</sup>	Dirt <sup>2</sup>	NA <sup>5</sup>	No <sup>2</sup>	120,000 <sup>1</sup>
Buckeye Municipal Airport	1021 <sup>5</sup>	17-35 <sup>5</sup>	4300 <sup>5</sup>	75 <sup>5</sup>	Asphalt <sup>5</sup>	12.5-S <sup>3</sup>	Full <sup>3</sup>	245,000 <sup>1</sup>
Casa Grande Municipal	1464 <sup>5</sup>	05-23 <sup>2</sup>	5200 <sup>2</sup>	100 <sup>2</sup>	Asphalt <sup>2</sup>	19.5-S <sup>5</sup> 65-D <sup>5</sup>	Full <sup>4</sup>	285,000 <sup>1</sup>
Cascabel Airpark (Private Use Facility)	3374 <sup>5</sup>	01-19 <sup>5</sup>	2750 <sup>5</sup>	50 <sup>5</sup>	Dirt <sup>5</sup>	NA <sup>5</sup>	No <sup>4</sup>	120,000 <sup>1</sup>
Chandler Municipal*	1243 <sup>5</sup>	4L-22R <sup>2</sup>	4401 <sup>2</sup>	75 <sup>2</sup>	Asphalt <sup>2</sup>	30-S <sup>5</sup>	Full <sup>4</sup>	269,000 <sup>2</sup>
		4R-22L <sup>2</sup>	4850 <sup>2</sup>	75 <sup>2</sup>	Asphalt <sup>2</sup>	30-S <sup>5</sup>	Full <sup>4</sup>	
Chinle Municipal	1760 <sup>5</sup>	17-35 <sup>5</sup>	4200 <sup>5</sup>	60 <sup>5</sup>	Dirt <sup>5</sup>	NA <sup>5</sup>	No <sup>4</sup>	120,000 <sup>1</sup>
Cibecue	5037 <sup>5</sup>	07-25 <sup>5</sup>	4200 <sup>5</sup>	100 <sup>5</sup>	Gravel <sup>5</sup>	NA <sup>5</sup>	NA	
Cochise College	4124 <sup>5</sup>	05-23 <sup>5</sup>	5303 <sup>5</sup>	72 <sup>5</sup>	Asphalt <sup>5</sup>	NA <sup>5</sup>	Full <sup>4</sup>	267,000 <sup>1</sup>
Cochise County	4183 <sup>8</sup>	03-21 <sup>2</sup>	6095 <sup>8</sup>	75 <sup>8</sup>	Asphalt <sup>2</sup>	50-S <sup>5</sup> 75-D <sup>5</sup> 135-DT <sup>5</sup>	Full <sup>2</sup>	230,000 <sup>1</sup>
Colorado City Municipal*	4874 <sup>5</sup>	02-20 <sup>5</sup>	5099 <sup>3</sup>	60 <sup>3</sup>	Asphalt <sup>5</sup>	13-S <sup>5</sup>	Full <sup>9</sup>	110,700 <sup>1</sup>
		11-29 <sup>5</sup>	6300 <sup>3</sup>	75 <sup>3</sup>	Asphalt <sup>5</sup>	30-S <sup>5</sup>	Full <sup>9</sup>	
Coolidge Municipal*	1587 <sup>8</sup>	05-23 <sup>3</sup>	5528 <sup>8</sup>	150 <sup>8</sup>	Asphalt <sup>3</sup>	80-S <sup>5</sup> 115-D <sup>3</sup>	Partial <sup>4</sup>	347,600 <sup>1</sup>
		17-35 <sup>3</sup>	3861 <sup>8</sup>	75 <sup>8</sup>	Asphalt <sup>3</sup>	17-S <sup>3</sup>	Full <sup>4</sup>	
Cottonwood Municipal	3550 <sup>5</sup>	14-32 <sup>2</sup>	4250 <sup>2</sup>	75 <sup>2</sup>	Asphalt <sup>2</sup>	4-S <sup>5</sup>	Full <sup>4</sup>	295,100 <sup>1</sup>
Douglas Municipal*	4173 <sup>5</sup>	03-21 <sup>5</sup>	5760 <sup>5</sup>	75 <sup>5</sup>	Asphalt <sup>5</sup>	12.5-S <sup>3</sup>	Partial <sup>4</sup>	155,200 <sup>1</sup>
		18-36 <sup>5</sup>	4095 <sup>5</sup>	100 <sup>5</sup>	Dirt <sup>5</sup>	NA <sup>5</sup>	No <sup>4</sup>	
Eagle Airpark	485 <sup>5</sup>	17-35 <sup>5</sup>	4800 <sup>5</sup>	50 <sup>5</sup>	Asphalt <sup>5</sup>	NA <sup>5</sup>	Full <sup>4</sup>	225,400 <sup>1</sup>
Eloy Municipal	1513 <sup>5</sup>	02-20 <sup>5</sup>	3900 <sup>5</sup>	60 <sup>5</sup>	Asphalt <sup>5</sup>	12.5-S <sup>3</sup>	Full <sup>4</sup>	285,400 <sup>1</sup>

**LEGEND:**

ASV – Annual Service Volume  
 S – Single Wheel Gear  
 D – Dual Wheel Gear  
 DT – Dual Tandem Wheel Gear  
 DDT – Double Dual Tandem Wheel Gear  
 NA – Native American  
 \* Airport with Multiple Runways

**FOOTNOTES:**

1. ADOT Aeronautics
2. Survey Questionnaires – 1999
3. A.L.P.'s - Airport Layout Plans
4. Aerial Photographs (1998) – ADOT Aeronautics
5. 5010 Forms
6. Call to Airport
7. Jeppesen Airway Manual
8. FAA Data Sheet
9. AOPA Airport Directory (2001-2002)

**TABLE 3-8: Existing Facilities (Continued)**

AIRPORT NAME	Elev. MSL [ft.]	Runway	Length [ft.]	Width [ft.]	Surface	Strength (1000) lbs.	Parallel Taxiway	ASV
Ernest A. Love Field*	5045 <sup>5</sup>	3R-21L <sup>5</sup>	7550 <sup>8</sup>	150 <sup>8</sup>	Asphalt <sup>5</sup>	63-S <sup>5</sup> 80-D <sup>5</sup> 100-DT <sup>5</sup>	Full <sup>4</sup>	326,400 <sup>1</sup>
		3L-21R <sup>5</sup>	4846 <sup>8</sup>	60 <sup>8</sup>	Asphalt <sup>5</sup>	13-S <sup>5</sup>	Full <sup>4</sup>	
		12-30 <sup>5</sup>	4408 <sup>8</sup>	75 <sup>8</sup>	Asphalt <sup>5</sup>	13-S <sup>5</sup>	Full <sup>4</sup>	
Estrella Sailport*	1273 <sup>5</sup>	6R-24L <sup>5</sup>	2520 <sup>5</sup>	30 <sup>5</sup>	Asphalt <sup>5</sup>	NA <sup>5</sup>	No <sup>4</sup>	120,000 <sup>1</sup>
		6C-24C <sup>5</sup>	1995 <sup>5</sup>	25 <sup>5</sup>	Dirt <sup>5</sup>	NA <sup>5</sup>	No <sup>4</sup>	
		6L-24R <sup>5</sup>	1910 <sup>5</sup>	25 <sup>5</sup>	Dirt <sup>5</sup>	NA <sup>5</sup>	No <sup>4</sup>	
		07-25 <sup>5</sup>	3740 <sup>5</sup>	20 <sup>5</sup>	Dirt <sup>5</sup>	NA <sup>5</sup>	No <sup>4</sup>	
Falcon Field	1394 <sup>8</sup>	4L-22R <sup>8</sup>	3801 <sup>8</sup>	75 <sup>8</sup>	Asphalt <sup>8</sup>	13-S <sup>5</sup>	Full <sup>9</sup>	381,800 <sup>0</sup>
		4R-22L <sup>8</sup>	5102 <sup>8</sup>	100 <sup>8</sup>	Asphalt <sup>8</sup>	38-S <sup>5</sup> 60-D <sup>5</sup> 90-DT <sup>5</sup>	Full <sup>9</sup>	
Flagstaff - Pulliam	7014 <sup>8</sup>	03-21 <sup>5</sup>	6999 <sup>5</sup>	150 <sup>5</sup>	Asphalt <sup>5</sup>	30-S <sup>5</sup> 95-D <sup>5</sup> 140-DT <sup>5</sup>	Full <sup>9</sup>	274,000 <sup>0</sup>
Flying J Ranch	3100 <sup>5</sup>	01-19 <sup>5</sup>	2580 <sup>5</sup>	50 <sup>5</sup>	Dirt <sup>5</sup>	NA <sup>5</sup>	No <sup>4</sup>	120,000 <sup>1</sup>
Forepaugh	2428 <sup>5</sup>	03-21 <sup>5</sup>	4671 <sup>5</sup>	80 <sup>5</sup>	Dirt <sup>5</sup>	NA <sup>5</sup>	No <sup>5</sup>	120,000 <sup>1</sup>
Ganado (NA)	6662 <sup>5</sup>	18-36 <sup>5</sup>	4500 <sup>5</sup>	130 <sup>5</sup>	Dirt <sup>5</sup>	NA <sup>5</sup>	No <sup>4</sup>	120,000 <sup>1</sup>
Gila Bend Municipal	778 <sup>5</sup>	04-22 <sup>2</sup>	5200 <sup>2</sup>	75 <sup>2</sup>	Asphalt <sup>2</sup>	13-S <sup>5</sup>	Full <sup>2</sup>	174,900 <sup>1</sup>
Glendale Municipal	1066 <sup>5</sup>	01-19 <sup>2</sup>	5351 <sup>8</sup>	75 <sup>8</sup>	Asphalt <sup>5</sup>	30-S <sup>5</sup> 38-D <sup>5</sup>	Full <sup>4</sup>	275,000 <sup>1</sup>
Grand Canyon Bar Ten	4100 <sup>5</sup>	16-34 <sup>5</sup>	4600 <sup>5</sup>	40 <sup>5</sup>	Dirt <sup>5</sup>	NA <sup>5</sup>	No <sup>4</sup>	120,000 <sup>1</sup>
Grand Canyon Caverns	5386 <sup>5</sup>	05-23 <sup>5</sup>	5100 <sup>5</sup>	45 <sup>5</sup>	Gravel <sup>5</sup>	NA <sup>5</sup>	No <sup>4</sup>	120,000 <sup>1</sup>
Grand Canyon National Park	6609 <sup>8</sup>	03-21 <sup>5</sup>	8999 <sup>5</sup>	150 <sup>5</sup>	Asphalt <sup>5</sup>	88-S <sup>5</sup> 108-D <sup>5</sup>	Full <sup>4</sup>	156,000 <sup>1</sup>
Grand Canyon West	4775 <sup>5</sup>	17-35 <sup>5</sup>	5200 <sup>5</sup>	60 <sup>5</sup>	Asphalt <sup>2</sup>	NA <sup>5</sup>	Partial <sup>2</sup>	120,000 <sup>1</sup>
Grande Valley	1290 <sup>5</sup>	03-21 <sup>5</sup>	3000 <sup>5</sup>	50 <sup>5</sup>	Dirt <sup>5</sup>	NA <sup>5</sup>	No <sup>4</sup>	120,000 <sup>1</sup>
Greenlee County	3811 <sup>5</sup>	07-25 <sup>2</sup>	4970 <sup>2</sup>	75 <sup>2</sup>	Asphalt <sup>2</sup>	21-S <sup>5</sup>	No <sup>2</sup>	126,300 <sup>1</sup>
H.A. Clark Memorial Field*	6680 <sup>5</sup>	18-36 <sup>5</sup>	5992 <sup>5</sup>	75 <sup>5</sup>	Asphalt <sup>5</sup>	15-S <sup>3</sup>	No <sup>4</sup>	137,400 <sup>1</sup>
Holbrook Municipal*	5262 <sup>8</sup>	03-21 <sup>2</sup>	6698 <sup>8</sup>	75 <sup>2</sup>	Asphalt <sup>2</sup>	12.5-S <sup>2</sup>	Full <sup>4</sup>	267,400 <sup>1</sup>
		11-29 <sup>2</sup>	3200 <sup>2</sup>	120 <sup>2</sup>	Dirt <sup>2</sup>	NA <sup>5</sup>	No <sup>4</sup>	

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**TABLE 3-8: Existing Facilities (Continued)**

AIRPORT NAME	Elev. MSL [ft.]	Runway	Length [ft.]	Width [ft.]	Surface	Strength (1000) lbs.	Parallel Taxiway	ASV
Kayenta (NA)*	5262 <sup>5</sup>	05-23 <sup>5</sup>	7140 <sup>5</sup>	75 <sup>5</sup>	Asphalt <sup>5</sup>	12.5-S <sup>5</sup>	No <sup>4</sup>	120,000 <sup>1</sup>
		11-29 <sup>5</sup>	3200 <sup>8</sup>	120 <sup>8</sup>	Dirt <sup>2</sup>	NA <sup>5</sup>	No <sup>5</sup>	
Kearny	1833 <sup>5</sup>	08-26 <sup>5</sup>	3400 <sup>5</sup>	60 <sup>5</sup>	Concrete <sup>5</sup>	13-S <sup>5</sup>	No <sup>4</sup>	120,000 <sup>1</sup>
Kingman*	3449 <sup>8</sup>	03-21 <sup>2</sup>	6831 <sup>8</sup>	150 <sup>2</sup>	Asphalt <sup>2</sup>	45-S <sup>5</sup> 25-D <sup>3</sup>	Full <sup>2</sup>	347,600 <sup>1</sup>
		17-35 <sup>2</sup>	6725 <sup>8</sup>	75 <sup>2</sup>	Asphalt <sup>2</sup>	22-S <sup>5</sup> 60-D <sup>5</sup>	Partial <sup>4</sup>	
Lake Havasu City Municipal	781 <sup>8</sup>	14-32 <sup>5</sup>	8000 <sup>8</sup>	100 <sup>5</sup>	Asphalt <sup>5</sup>	100-S <sup>5</sup>	Full <sup>4</sup>	307,900 <sup>1</sup>
Laughlin/Bullhead International	695 <sup>8</sup>	16-34 <sup>5</sup>	7520 <sup>8</sup>	150 <sup>5</sup>	Asphalt <sup>5</sup>	75-S <sup>5</sup> 200-D <sup>5</sup> 400-DT <sup>5</sup>	Full <sup>2</sup>	267,000 <sup>1</sup>
Marana NW Regional*	2031 <sup>5</sup>	03-21 <sup>5</sup>	4201 <sup>5</sup>	75 <sup>5</sup>	Asphalt <sup>5</sup>	12.5-S <sup>3</sup>	Full <sup>2</sup>	267,000 <sup>1</sup>
		12-30 <sup>5</sup>	6901 <sup>5</sup>	100 <sup>5</sup>	Asphalt <sup>5</sup>	30-S <sup>5</sup> 60-D <sup>5</sup> 140-DT <sup>5</sup>	Full <sup>2</sup>	
Marble Canyon	3603 <sup>5</sup>	03-21 <sup>5</sup>	3715 <sup>5</sup>	35 <sup>5</sup>	Asphalt <sup>5</sup>	NA <sup>5</sup>	No <sup>2</sup>	100,000 <sup>1</sup>
Memorial Airfield (NA)*(Private Use Facility)	1185 <sup>5</sup>	03-21 <sup>5</sup>	5200 <sup>5</sup>	200 <sup>5</sup>	Asphalt <sup>5</sup>	NA <sup>5</sup>	No <sup>2</sup>	100,000 <sup>1</sup>
		12-30 <sup>5</sup>	8560 <sup>5</sup>	300 <sup>5</sup>	Asphalt <sup>5</sup>	NA <sup>5</sup>	Full <sup>2</sup>	
Mogollon Airpark (Private Use Facility)								
Nogales International	3955 <sup>5</sup>	03-21 <sup>5</sup>	7199 <sup>8</sup>	90 <sup>8</sup>	Asphalt <sup>5</sup>	21-S <sup>5</sup>	Full <sup>2</sup>	267,100 <sup>1</sup>
Page Municipal*	4313 <sup>8</sup>	15-33 <sup>5</sup>	5499 <sup>8</sup>	150 <sup>8</sup>	Asphalt <sup>5</sup>	65-S <sup>5</sup> 90-D <sup>5</sup> 190-DT <sup>5</sup>	Full <sup>2</sup>	294,600 <sup>1</sup>
		07-25 <sup>5</sup>	2200 <sup>5</sup>	75 <sup>5</sup>	Dirt <sup>5</sup>	NA <sup>5</sup>	No <sup>2</sup>	
Payson	5157 <sup>5</sup>	06-24 <sup>5</sup>	5500 <sup>5</sup>	75 <sup>5</sup>	Asphalt <sup>5</sup>	13-S <sup>5</sup>	Full <sup>2</sup>	267,000 <sup>1</sup>
Pearce Ferry	2941 <sup>5</sup>	01-19 <sup>5</sup>	2810 <sup>5</sup>	90 <sup>5</sup>	Asphalt <sup>5</sup>	NA <sup>5</sup>	No <sup>2</sup>	120,000 <sup>1</sup>
Phoenix Deer Valley*	1478 <sup>8</sup>	7L-25R <sup>8</sup>	4500 <sup>8</sup>	75 <sup>8</sup>	Asphalt <sup>5</sup>	20-S <sup>8</sup>	Full <sup>9</sup>	336,400 <sup>1</sup>
		7R-25L <sup>8</sup>	8208 <sup>8</sup>	100 <sup>8</sup>	Asphalt <sup>5</sup>	40-S <sup>8</sup> 50-D <sup>8</sup>	Full <sup>9</sup>	
Phoenix Goodyear	959 <sup>8</sup>	03-21 <sup>5</sup>	8500 <sup>5</sup>	150 <sup>5</sup>	Asphalt <sup>5</sup>	75-S <sup>5</sup> 200-D <sup>5</sup> 270-DT <sup>5</sup>	Full <sup>5</sup>	276,100 <sup>1</sup>

**LEGEND:**

ASV – Annual Service Volume  
 S – Single Wheel Gear  
 D – Dual Wheel Gear  
 DT – Dual Tandem Wheel Gear  
 DDT – Double Dual Tandem Wheel Gear  
 NA – Native American

\* Airport with Multiple Runways

**FOOTNOTES:**

1. ADOT Aeronautics
2. Survey Questionnaires – 1999
3. A.L.P.'s - Airport Layout Plans
4. Aerial Photographs (1998) – ADOT Aeronautics
5. 5010 Forms
6. Call to Airport
7. Jeppesen Airway Manual
8. FAA Data Sheet
9. AOPA Airport Directory (2001-2002)

**TABLE 3-8: Existing Facilities (Continued)**

AIRPORT NAME	Elev. MSL [ft.]	Runway	Length [ft.]	Width [ft.]	Surface	Strength (1000) lbs.	Parallel Taxiway	ASV
Phoenix Sky Harbor International*	1135 <sup>8</sup>	7L-25R <sup>8</sup>	10300 <sup>8</sup>	150 <sup>8</sup>	Asphalt <sup>8</sup>	30-S <sup>5</sup> 200-D <sup>5</sup> 400-DT <sup>5</sup> 620-DDT <sup>5</sup>	Full <sup>5</sup>	475,000 <sup>1</sup>
		7R-25L <sup>8</sup>	7800 <sup>8</sup>	150 <sup>8</sup>	Concrete <sup>8</sup>	30-S <sup>5</sup> 200-D <sup>5</sup> 400-DT <sup>5</sup> 620-DDT <sup>5</sup>	Full <sup>5</sup>	
		8-26 <sup>8</sup>	11492 <sup>8</sup>	150 <sup>8</sup>	Concrete <sup>8</sup>	30-S <sup>5</sup> 170-D <sup>5</sup> 280-DT <sup>5</sup> 620-DDT <sup>5</sup>	Full <sup>5</sup>	
Pinal Airpark	1892 <sup>8</sup>	12-30 <sup>5</sup>	6850 <sup>5</sup>	150 <sup>5</sup>	Asphalt <sup>5</sup>	68-S <sup>5</sup> 100-D <sup>5</sup> 150-DT <sup>5</sup>	Full <sup>5</sup>	195,000 <sup>1</sup>
Pleasant Valley*	1580 <sup>5</sup>	5C-23C <sup>5</sup>	4200 <sup>5</sup>	100 <sup>5</sup>	Dirt <sup>5</sup>	NA <sup>5</sup>	No <sup>5</sup>	120,000 <sup>1</sup>
		5L-23L <sup>5</sup>	4200 <sup>5</sup>	100 <sup>5</sup>	Dirt <sup>5</sup>	NA <sup>5</sup>	No <sup>5</sup>	
		5R-23R <sup>5</sup>	4200 <sup>5</sup>	100 <sup>5</sup>	Dirt <sup>5</sup>	NA <sup>5</sup>	No <sup>5</sup>	
		14-32 <sup>5</sup>	2400 <sup>5</sup>	100 <sup>5</sup>	Dirt <sup>5</sup>	NA <sup>5</sup>	No <sup>5</sup>	
Polacca (NA)	5573 <sup>5</sup>	04-22 <sup>5</sup>	4200 <sup>5</sup>	50 <sup>5</sup>	Asphalt <sup>5</sup>	NA <sup>5</sup>	No <sup>5</sup>	120,000 <sup>1</sup>
Quartzite -No longer a viable candidate	NA	NA	NA	NA	NA	NA	NA	NA
Rolle Airfield	163 <sup>5</sup>	17-35 <sup>5</sup>	2800 <sup>5</sup>	60 <sup>5</sup>	Asphalt <sup>5</sup>	NA <sup>5</sup>	No <sup>5</sup>	120,000 <sup>1</sup>
Ryan Field*	2403 <sup>8</sup>	6R-24L <sup>5</sup>	5500 <sup>5</sup>	75 <sup>5</sup>	Asphalt <sup>5</sup>	13-S <sup>5</sup> 30-D <sup>5</sup>	Full <sup>5</sup>	355,000 <sup>1</sup>
		6L-24R <sup>5</sup>	4900 <sup>5</sup>	75 <sup>5</sup>	Asphalt <sup>5</sup>	13-S <sup>5</sup> 30-D <sup>5</sup>	Partial <sup>5</sup>	
		15-33 <sup>5</sup>	4000 <sup>8</sup>	75 <sup>8</sup>	Asphalt <sup>8</sup>	NA <sup>5</sup>	Partial <sup>5</sup>	
Safford Regional*	3177 <sup>8</sup>	12-30 <sup>5</sup>	6015 <sup>5</sup>	100 <sup>5</sup>	Asphalt <sup>5</sup>	33-S <sup>5</sup>	Full <sup>5</sup>	286,700 <sup>1</sup>
		08-26 <sup>5</sup>	4800 <sup>5</sup>	75 <sup>5</sup>	Asphalt <sup>5</sup>	23-S <sup>5</sup>	Full <sup>9</sup>	
St. Johns Industrial Airpark*	5736 <sup>8</sup>	03-21 <sup>8</sup>	3400 <sup>5</sup>	60 <sup>5</sup>	Asphalt <sup>5</sup>	55-S <sup>5</sup>	Full <sup>6</sup>	286,700 <sup>1</sup>
		14-32 <sup>8</sup>	5322 <sup>8</sup>	75 <sup>8</sup>	Asphalt <sup>8</sup>	90-S <sup>5</sup>	Full <sup>6</sup>	
San Carlos Apache	3235 <sup>5</sup>	09-27 <sup>5</sup>	5804 <sup>5</sup>	75 <sup>5</sup>	Asphalt <sup>5</sup>	12.5-S <sup>5</sup>	Full <sup>4</sup>	285,400 <sup>1</sup>
San Manuel	3274 <sup>5</sup>	11-29 <sup>5</sup>	4214 <sup>5</sup>	55 <sup>5</sup>	Gravel <sup>5</sup>	NA <sup>5</sup>	No <sup>5</sup>	120,700 <sup>1</sup>
Scottsdale	1510 <sup>5</sup>	03-21 <sup>5</sup>	8249 <sup>8</sup>	100 <sup>8</sup>	Asphalt <sup>5</sup>	45-S <sup>5</sup> 75-D <sup>5</sup>	Full <sup>5</sup>	294,600 <sup>1</sup>

**LEGEND:**

ASV – Annual Service Volume  
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 DDT – Double Dual Tandem Wheel Gear  
 NA – Native American  
 \* Airport with Multiple Runways

**FOOTNOTES:**

1. ADOT Aeronautics
2. Survey Questionnaires – 1999
3. A.L.P.'s - Airport Layout Plans
4. Aerial Photographs (1998) – ADOT Aeronautics
5. 5010 Forms
6. Call to Airport
7. Jeppesen Airway Manual
8. FAA Data Sheet
9. AOPA Airport Directory (2001-2002)

TABLE 3-8: Existing Facilities (Continued)

AIRPORT NAME	Elev. MSL [ft.]	Runway	Length [ft.]	Width [ft.]	Surface	Strength (1000) lbs.	Parallel Taxiway	ASV
Sedona	4830 <sup>8</sup>	03-21 <sup>8</sup>	5132 <sup>8</sup>	75 <sup>8</sup>	Asphalt <sup>5</sup>	15-S <sup>5</sup> 30-D <sup>5</sup>	Full <sup>2</sup>	267,100 <sup>1</sup>
Seligman	5235 <sup>5</sup>	04-22 <sup>5</sup>	4800 <sup>5</sup>	75 <sup>5</sup>	Asphalt <sup>5</sup>	NA <sup>5</sup>	Partial <sup>4</sup>	120,000 <sup>1</sup>
Sells (NA)	2409 <sup>5</sup>	04-22 <sup>5</sup>	5830 <sup>5</sup>	48 <sup>5</sup>	Asphalt <sup>5</sup>	13-S <sup>5</sup>	No <sup>2</sup>	130,000 <sup>1</sup>
Show Low Municipal*	6415 <sup>8</sup>	03-21 <sup>5</sup>	3937 <sup>8</sup>	60 <sup>8</sup>	Asphalt <sup>5</sup>	NA <sup>5</sup>	Partial <sup>2</sup>	378,400 <sup>1</sup>
		06-24 <sup>5</sup>	7200 <sup>5</sup>	75 <sup>5</sup>	Asphalt <sup>5</sup>	35-S <sup>5</sup> 60-D <sup>5</sup>	No <sup>2</sup>	
Sierra Vista Muni / Libby AAF*	4719 <sup>5</sup>	03-21 <sup>5</sup>	4285 <sup>8</sup>	75 <sup>5</sup>	Asphalt <sup>5</sup>	NA <sup>5</sup>	No <sup>9</sup>	367,400 <sup>1</sup>
		08-26 <sup>5</sup>	12001 <sup>8</sup>	150 <sup>8</sup>	Concrete <sup>8</sup>	70-S <sup>5</sup> 70-D <sup>5</sup> 70-DT <sup>5</sup> 70-DDT <sup>5</sup>	Full <sup>2</sup>	
		12-30 <sup>8</sup>	5366 <sup>8</sup>	100 <sup>8</sup>	Asphalt <sup>8</sup>	46-S <sup>5</sup> 106-D <sup>5</sup> 137-DT <sup>5</sup> 172-DDT <sup>5</sup>	Full <sup>3</sup>	
Stellar Airpark	1177 <sup>8</sup>	17-35 <sup>5</sup>	4295 <sup>8</sup>	60 <sup>8</sup>	Asphalt <sup>5</sup>	NA <sup>5</sup>	Partial <sup>4</sup>	120,000 <sup>1</sup>
Sun Valley	725 <sup>5</sup>	18-36 <sup>5</sup>	3700 <sup>5</sup>	42 <sup>5</sup>	Asphalt <sup>5</sup>	NA <sup>5</sup>	No <sup>2</sup>	120,000 <sup>1</sup>
Superior Municipal	2646 <sup>5</sup>	4-22 <sup>5</sup>	3500 <sup>5</sup>	75 <sup>5</sup>	Dirt <sup>5</sup>	NA <sup>5</sup>	No <sup>2</sup>	120,000 <sup>1</sup>
Taylor	5280 <sup>8</sup>	03-21 <sup>8</sup>	7200 <sup>8</sup>	75 <sup>8</sup>	Asphalt <sup>5</sup>	12.5-S	No <sup>2</sup>	137,400 <sup>1</sup>
Tempe Bar	1549 <sup>5</sup>	18-36 <sup>5</sup>	3500 <sup>5</sup>	50 <sup>5</sup>	Asphalt <sup>5</sup>	10-S <sup>5</sup>	No <sup>2</sup>	120,000 <sup>1</sup>
Tombstone Municipal	4743 <sup>5</sup>	06-24 <sup>5</sup>	4610 <sup>5</sup>	65 <sup>5</sup>	Dirt <sup>5</sup>	NA <sup>5</sup>	No <sup>2</sup>	105,900 <sup>1</sup>
Town of Springerville Municipal*	7051 <sup>8</sup>	03-21 <sup>5</sup>	8417 <sup>8</sup>	75 <sup>8</sup>	Asphalt <sup>5</sup>	4-S <sup>5</sup>	Full <sup>2</sup>	286,700 <sup>1</sup>
		11-29 <sup>5</sup>	4589 <sup>8</sup>	60 <sup>8</sup>	Asphalt <sup>5</sup>	NA <sup>5</sup>	No <sup>2</sup>	
Tuba City (NA)	4513	15-33 <sup>5</sup>	6230 <sup>5</sup>	75 <sup>5</sup>	Asphalt <sup>5</sup>	13-S <sup>5</sup>	No <sup>2</sup>	120,000 <sup>1</sup>
Tucson International*	2643 <sup>8</sup>	03-21 <sup>5</sup>	7000 <sup>5</sup>	150 <sup>5</sup>	Asphalt <sup>5</sup>	105-S <sup>5</sup> 137-D <sup>5</sup> 230-DT <sup>5</sup> 500-DDT <sup>5</sup>	No <sup>2</sup>	380,000 <sup>1</sup>
		11L-29R <sup>5</sup>	10996 <sup>5</sup>	150 <sup>5</sup>	Asphalt <sup>5</sup>	160-S <sup>5</sup> 200-D <sup>5</sup> 350-DT <sup>5</sup> 585-DDT <sup>5</sup>	Full <sup>2</sup>	
		11R-29L <sup>5</sup>	8408 <sup>5</sup>	75 <sup>5</sup>	Asphalt <sup>5</sup>	120-S <sup>5</sup> 140-D <sup>5</sup> 220-DT <sup>5</sup>	Full <sup>2</sup>	
Tuweep	4682 <sup>5</sup>	02-20 <sup>5</sup>	3400 <sup>5</sup>	40 <sup>5</sup>	Dirt <sup>5</sup>	NA <sup>5</sup>	No <sup>2</sup>	120,000 <sup>1</sup>

**LEGEND:**

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 DT – Dual Tandem Wheel Gear  
 DDT – Double Dual Tandem Wheel Gear  
 NA – Native American

\* Airport with Multiple Runways

**FOOTNOTES:**

1. ADOT Aeronautics
2. Survey Questionnaires – 1999
3. A.L.P.'s - Airport Layout Plans
4. Aerial Photographs (1998) – ADOT Aeronautics
5. 5010 Forms
6. Call to Airport
7. Jeppesen Airway Manual
8. FAA Data Sheet
9. AOPA Airport Directory (2001-2002)



**TABLE 3-8: Existing Facilities (Continued)**

AIRPORT NAME	Elev. MSL	Runway	Length	Width	Surface	Strength	Parallel	
Valle Airport	5999 <sup>5</sup>	01-19 <sup>5</sup>	4199 <sup>8</sup>	45 <sup>8</sup>	Asphalt <sup>8</sup>	NA <sup>5</sup>	Partial <sup>6</sup>	120,000 <sup>1</sup>
Whiteriver (NA)	5152 <sup>5</sup>	01-19 <sup>5</sup>	6288 <sup>5</sup>	75 <sup>5</sup>	Asphalt <sup>5</sup>	16-S <sup>5</sup>	No <sup>2</sup>	230,000 <sup>1</sup>
Wickenburg Municipal	2386 <sup>5</sup>	05-23 <sup>5</sup>	5050 <sup>5</sup>	75 <sup>5</sup>	Asphalt <sup>5</sup>	16-S <sup>5</sup>	Full <sup>2</sup>	267,000 <sup>1</sup>
Williams Gateway*	1382 <sup>8</sup>	12C-30C <sup>5</sup>	10201 <sup>8</sup>	150 <sup>5</sup>	Asphalt- Concrete <sup>5</sup>	55-S <sup>5</sup> 95-D <sup>5</sup> 185-DT <sup>5</sup> 550-DDT <sup>5</sup>	No <sup>2</sup>	410,000 <sup>1</sup>
		12L-30R <sup>5</sup>	9300 <sup>5</sup>	150 <sup>5</sup>	Asphalt- Concrete <sup>5</sup>	75-S <sup>5</sup> 210-D <sup>5</sup> 590-DT <sup>5</sup> 850-DDT <sup>5</sup>	Partial <sup>4</sup>	
		12R-30L <sup>5</sup>	10400 <sup>5</sup>	150 <sup>5</sup>	Asphalt- Concrete <sup>5</sup>	55-S <sup>5</sup> 95-D <sup>5</sup> 185-DT <sup>5</sup> 550-DDT <sup>5</sup>	Full <sup>2</sup>	
Window Rock (NA)	6742 <sup>8</sup>	02-20 <sup>5</sup>	7000 <sup>5</sup>	75 <sup>5</sup>	Asphalt <sup>5</sup>	30-S <sup>5</sup> 45-D <sup>5</sup> 75-DT <sup>5</sup>	No <sup>2</sup>	120,000 <sup>1</sup>
Winslow-Lindberg Regional*	4941 <sup>8</sup>	04-22 <sup>5</sup>	7499 <sup>8</sup>	150 <sup>8</sup>	Asphalt- Concrete <sup>5</sup>	50-S <sup>5</sup> 80-D <sup>5</sup> 125-DT <sup>5</sup>	Full <sup>2</sup>	286,700 <sup>1</sup>
		11-29 <sup>5</sup>	7100 <sup>8</sup>	150 <sup>8</sup>	Asphalt- Concrete <sup>5</sup>	60-S <sup>5</sup> 70-D <sup>5</sup> 110-DT <sup>5</sup>	Full <sup>2</sup>	
Yuma International/MCAS Yuma*	215 <sup>8</sup>	3L-21R <sup>5</sup>	13300 <sup>8</sup>	200 <sup>8</sup>	Concrete <sup>8</sup>	103-S <sup>5</sup> 200-D <sup>5</sup> 400-DT <sup>5</sup>	No <sup>2</sup>	347,600 <sup>1</sup>
		3R-21L <sup>5</sup>	9241 <sup>8</sup>	150 <sup>5</sup>	Asphalt- Concrete <sup>5</sup>	162-S <sup>5</sup> 200-D <sup>5</sup> 400-DT <sup>5</sup>	Full <sup>2</sup>	
		08-26 <sup>5</sup>	6146 <sup>8</sup>	150 <sup>5</sup>	Asphalt- Concrete <sup>5</sup>	63-S <sup>5</sup> 137-DT <sup>5</sup> 206-DT <sup>5</sup>	Full <sup>2</sup>	
		17-35 <sup>5</sup>	5711 <sup>8</sup>	150 <sup>5</sup>	Asphalt- Concrete <sup>5</sup>	72-S <sup>5</sup> 171-D <sup>5</sup> 255-DT <sup>5</sup>	No <sup>2</sup>	

**LEGEND:**

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NA – Native American  
\* Airport with Multiple Runways

**FOOTNOTES:**

1. ADOT Aeronautics
2. Survey Questionnaires – 1999
3. A.L.P.'s - Airport Layout Plans
4. Aerial Photographs (1998) – ADOT Aeronautics
5. 5010 Forms
6. Call to Airport
7. Jeppesen Airway Manual
8. FAA Data Sheet
9. AOPA Airport Directory (2001-2002)

**TABLE 3-9: Navigational, Lighting, Landing, and Weather Aids**

AIRPORT NAME	ILS	NPI	ALS	REIL	HIRL	MIRL	LIRL	MITL	REFLECTORS	APRON LTG.	BEACON	PAPI	VASI	WIND SOCK	DME	LOC	NDB	RNAV	VOR	GPS	WRS
Ajo Municipal							◆ <sup>1</sup>				◆ <sup>1</sup>		◆ <sup>5</sup>	◆ <sup>1</sup>							◆ <sup>6</sup>
Apache Junction (New) No longer a viable candidate																					
Avi Suquilla (NA)						◆ <sup>1</sup>					◆ <sup>1</sup>	◆ <sup>7</sup>		◆ <sup>1</sup>	◆ <sup>7</sup>				◆ <sup>6</sup>	◆ <sup>7</sup>	
Bagdad							◆ <sup>8</sup>				◆ <sup>1</sup>			◆ <sup>1</sup>							
Benson Municipal				◆ <sup>1</sup>		◆ <sup>1</sup>					◆ <sup>1</sup>	◆ <sup>1</sup>		◆ <sup>1</sup>							
Bisbee Douglas International		◆ <sup>7</sup>				◆ <sup>3</sup>					◆ <sup>1</sup>		◆ <sup>3</sup>	◆ <sup>1</sup>	◆ <sup>7</sup>				◆ <sup>3</sup>	◆ <sup>7</sup>	
Bisbee Municipal						◆ <sup>2</sup>					◆ <sup>3</sup>	◆ <sup>2</sup>		◆ <sup>1</sup>			◆ <sup>3</sup>				◆ <sup>9</sup>
Bowie														◆ <sup>2</sup>							
Buckeye Municipal Airport						◆ <sup>1</sup>		◆ <sup>3</sup>			◆ <sup>1</sup>	◆ <sup>3</sup>		◆ <sup>1</sup>					◆ <sup>3</sup>		
Casa Grande Municipal	◆ <sup>2</sup>	◆ <sup>1</sup>	◆ <sup>1</sup>			◆ <sup>2</sup>		◆ <sup>2</sup>			◆ <sup>2</sup>		◆ <sup>2</sup>	◆ <sup>2</sup>	◆ <sup>8</sup>	◆ <sup>1</sup>			◆ <sup>2</sup>	◆ <sup>2</sup>	◆ <sup>2</sup>
Cascabel Airpark (Private Use Facility)														◆ <sup>1</sup>							
Chandler Municipal		◆ <sup>1</sup>		◆ <sup>2</sup>		◆ <sup>2</sup>		◆ <sup>2</sup>			◆ <sup>2</sup>	◆ <sup>2</sup>		◆ <sup>2</sup>			◆ <sup>2</sup>	◆ <sup>10</sup>	◆ <sup>2</sup>	◆ <sup>2</sup>	◆ <sup>2</sup>
Chinle Municipal														◆ <sup>1</sup>							
Cibecue																					
Cochise College							◆ <sup>8</sup>				◆ <sup>1</sup>	◆ <sup>2</sup>		◆ <sup>1</sup>							
Cochise County		◆ <sup>3</sup>				◆ <sup>2</sup>					◆ <sup>2</sup>			◆ <sup>2</sup>						◆ <sup>2</sup>	
Colorado City Municipal		◆ <sup>1</sup>		◆ <sup>1</sup>		◆ <sup>1</sup>					◆ <sup>1</sup>	◆ <sup>1</sup>		◆ <sup>1</sup>			◆ <sup>7</sup>		◆ <sup>7</sup>	◆ <sup>7</sup>	
Coolidge Municipal		◆ <sup>9</sup>				◆ <sup>1</sup>		◆ <sup>3</sup>			◆ <sup>3</sup>		◆ <sup>1</sup>	◆ <sup>1</sup>	◆ <sup>3</sup>	◆ <sup>10</sup>			◆ <sup>3</sup>	◆ <sup>3</sup>	
Cottonwood Municipal				◆ <sup>2</sup>		◆ <sup>2</sup>					◆ <sup>2</sup>	◆ <sup>2</sup>		◆ <sup>2</sup>							
Douglas Municipal						◆ <sup>1</sup>					◆ <sup>1</sup>	◆ <sup>3</sup>		◆ <sup>1</sup>							
Eagle Airpark									◆ <sup>1</sup>		◆ <sup>2</sup>			◆ <sup>2</sup>							
Eloy Municipal			◆ <sup>1</sup>			◆ <sup>3</sup>			◆ <sup>1</sup>		◆ <sup>1</sup>			◆ <sup>1</sup>							

**LEGEND:**

ILS	Instrument Landing System
NPI	Non Precision Instrument
ALS	Approach Lighting System
REIL	Runway End Identifier Lights
HIRL	High Intensity Runway Lights
MIRL	Medium Intensity Runway Lights
LIRL	Low Intensity Runway Lights
MITL	Medium Intensity Taxiway Lights
PAPI	Precision Approach Path Indicator
VASI	Visual Approach Slope Indicators
DME	Distance Measuring Equipment
LOC	Localizer
NDB	Non Directional Beacon
RNAV	Area Navigation
VOR	Very High Freq. Omnidirectional
GPS	Global Positioning System
WRS	Weather Reporting System
NA	Native American

**FOOTNOTES:**

1. 5010 Forms
2. Survey Questionnaires – 1999
3. ALP's – Airport Layout Plans
4. Aerial Photographs
5. Airport/Facility Directory – Southwest U.S. (2000)
6. Call to Airport
7. Jeppesen Airway Manual
8. ADOT Aeronautics Division – Navigational Aids and Aviation Services Special Study (November 1998)
9. FAA Datasheet
10. U.S. Terminal Procedures (SW-1, 2001)

**TABLE 3-9: Navigational, Lighting, Landing, and Weather Aids (continued)**

AIRPORT NAME	ILS	NPI	ALS	REIL	HIRL	MIRL	LIRL	MITL	REFLECTORS	APRON LTG.	BEACON	PAPI	VASI	WIND SOCK	DME	LOC	NDB	RNAV	VOR	GPS	WRS
Ernest A. Love Field	◆ <sup>3</sup>	◆ <sup>3</sup>	◆ <sup>7</sup>	◆ <sup>3</sup>		◆ <sup>3</sup>		◆ <sup>3</sup>			◆ <sup>1</sup>	◆ <sup>1</sup>		◆ <sup>1</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>		◆ <sup>7</sup>	◆ <sup>3</sup>	◆ <sup>3</sup>	◆ <sup>8</sup>
Estrella Sailport														◆ <sup>1</sup>							
Falcon Field		◆ <sup>1</sup>		◆ <sup>2</sup>		◆ <sup>2</sup>		◆ <sup>2</sup>		◆ <sup>6</sup>	◆ <sup>2</sup>	◆ <sup>2</sup>		◆ <sup>2</sup>			◆ <sup>2</sup>			◆ <sup>2</sup>	◆ <sup>8</sup>
Flagstaff - Pulliam	◆ <sup>7</sup>	◆ <sup>3</sup>	◆ <sup>7</sup>		◆ <sup>2</sup>			◆ <sup>2</sup>			◆ <sup>2</sup>		◆ <sup>2</sup>	◆ <sup>2</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>		◆ <sup>7</sup>	◆ <sup>7</sup>	◆ <sup>2</sup>
Flying J Ranch														◆ <sup>1</sup>							
Forepaugh														◆ <sup>1</sup>							
Ganado (NA)														◆ <sup>1</sup>							
Gila Bend Municipal							◆ <sup>8</sup>				◆ <sup>2</sup>			◆ <sup>2</sup>				◆ <sup>2</sup>			
Glendale Municipal		◆ <sup>9</sup>		◆ <sup>2</sup>		◆ <sup>2</sup>		◆ <sup>2</sup>			◆ <sup>2</sup>	◆ <sup>2</sup>		◆ <sup>2</sup>				◆ <sup>9</sup>		◆ <sup>10</sup>	◆ <sup>9</sup>
Grand Canyon Bar-Ten														◆ <sup>1</sup>							
Grand Canyon Caverns														◆ <sup>1</sup>							
Grand Canyon National Park	◆ <sup>3</sup>	◆ <sup>3</sup>	◆ <sup>7</sup>	◆ <sup>2</sup>		◆ <sup>2</sup>		◆ <sup>3</sup>			◆ <sup>2</sup>		◆ <sup>2</sup>	◆ <sup>2</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>			◆ <sup>3</sup>	◆ <sup>7</sup>	◆ <sup>2</sup>
Grand Canyon West																					
Grande Valley																					
Greenlee County						◆ <sup>2</sup>					◆ <sup>2</sup>			◆ <sup>2</sup>							
H.A. Clark Memorial Field						◆ <sup>1</sup>					◆ <sup>3</sup>			◆ <sup>1</sup>							
Holbrook Municipal				◆ <sup>2</sup>		◆ <sup>2</sup>		◆ <sup>2</sup>			◆ <sup>2</sup>	◆ <sup>1</sup>		◆ <sup>2</sup>							
Kayenta (NA)				◆ <sup>9</sup>		◆ <sup>5</sup>					◆ <sup>1</sup>		◆ <sup>5</sup>	◆ <sup>1</sup>							◆ <sup>9</sup>
Kearny														◆ <sup>2</sup>							
Kingman		◆ <sup>3</sup>				◆ <sup>2</sup>		◆ <sup>2</sup>			◆ <sup>2</sup>	◆ <sup>2</sup>	◆ <sup>2</sup>	◆ <sup>2</sup>	◆ <sup>7</sup>				◆ <sup>2</sup>	◆ <sup>7</sup>	◆ <sup>2</sup>
Lake Havasu City Municipal		◆ <sup>9</sup>		◆ <sup>3</sup>		◆ <sup>1</sup>			◆ <sup>3</sup>		◆ <sup>3</sup>	◆ <sup>3</sup>		◆ <sup>1</sup>	◆ <sup>7</sup>				◆ <sup>7</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>
Laughlin/Bullhead International		◆ <sup>1</sup>		◆ <sup>1</sup>		◆ <sup>1</sup>					◆ <sup>1</sup>	◆ <sup>7</sup>		◆ <sup>1</sup>	◆ <sup>7</sup>				◆ <sup>7</sup>	◆ <sup>7</sup>	◆ <sup>9</sup>
Marana NW Regional				◆ <sup>5</sup>		◆ <sup>5</sup>		◆ <sup>6</sup>	◆ <sup>6</sup>		◆ <sup>1</sup>	◆ <sup>5</sup>	◆ <sup>5</sup>	◆ <sup>1</sup>			◆ <sup>3</sup>				◆ <sup>3</sup>

**LEGEND:**

ILS	Instrument Landing System
NPI	Non Precision Instrument
ALS	Approach Lighting System
REIL	Runway End Identifier Lights
HIRL	High Intensity Runway Lights
MIRL	Medium Intensity Runway Lights
LIRL	Low Intensity Runway Lights
MITL	Medium Intensity Taxiway Lights
PAPI	Precision Approach Path Indicator
VASI	Visual Approach Slope Indicators
DME	Distance Measuring Equipment
LOC	Localizer
NDB	Non Directional Beacon
RNAV	Area Navigation
VOR	Very High Freq. Omnidirectional
GPS	Global Positioning System
WRS	Weather Reporting System
NA	Native American

**FOOTNOTES:**

1. 5010 Forms
2. Survey Questionnaires – 1999
3. ALP's – Airport Layout Plans
4. Aerial Photographs
5. Airport/Facility Directory – Southwest U.S. (2000)
6. Call to Airport
7. Jeppesen Airway Manual
8. ADOT Aeronautics Division – Navigational Aids and Aviation Services Special Study (November 1998)
9. FAA Datasheet
10. U.S. Terminal Procedures (SW-1, 2001)

**TABLE 3-9: Navigational, Lighting, Landing, and Weather Aids (continued)**

AIRPORT NAME	ILS	NPI	ALS	REIL	HIRL	MIRL	LIRL	MITL	REFLECTORS	APRON LTG.	BEACON	PAPI	VASI	WIND SOCK	DME	LOC	NDB	RNAV	VOR	GPS	WRS
Marble Canyon														◆ <sup>1</sup>							
Memorial Airfield (NA)(Private Use Facility)														◆ <sup>1</sup>							
Mogollon Airpark (Private Use Facility)											◆ <sup>1</sup>			◆ <sup>1</sup>							
Nogales International		◆ <sup>10</sup>				◆ <sup>1</sup>					◆ <sup>1</sup>		◆ <sup>8</sup>	◆ <sup>1</sup>	◆ <sup>7</sup>		◆ <sup>3</sup>		◆ <sup>7</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>
Page Municipal		◆ <sup>3</sup>		◆ <sup>2</sup>		◆ <sup>2</sup>		◆ <sup>3</sup>			◆ <sup>2</sup>		◆ <sup>2</sup>	◆ <sup>2</sup>					◆ <sup>2</sup>	◆ <sup>7</sup>	◆ <sup>2</sup>
Payson				◆ <sup>1</sup>		◆ <sup>1</sup>					◆ <sup>1</sup>	◆ <sup>3</sup>		◆ <sup>1</sup>				◆ <sup>9</sup>		◆ <sup>9</sup>	◆ <sup>5</sup>
Pearce Ferry														◆ <sup>2</sup>							
Phoenix Deer Valley		◆ <sup>1</sup>		◆ <sup>1</sup>		◆ <sup>1</sup>					◆ <sup>1</sup>	◆ <sup>1</sup>		◆ <sup>1</sup>			◆ <sup>7</sup>			◆ <sup>2</sup>	◆ <sup>8</sup>
Phoenix Goodyear				◆ <sup>1</sup>		◆ <sup>1</sup>					◆ <sup>1</sup>		◆ <sup>1</sup>	◆ <sup>1</sup>							◆ <sup>8</sup>
Phoenix Sky Harbor Int'l	◆ <sup>7</sup>	◆ <sup>1</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>	◆ <sup>1</sup>			◆ <sup>2</sup>		◆ <sup>2</sup>	◆ <sup>2</sup>	◆ <sup>1</sup>	◆ <sup>7</sup>	◆ <sup>2</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>		◆ <sup>10</sup>	◆ <sup>7</sup>	◆ <sup>2</sup>	◆ <sup>2</sup>
Pinal Airpark						◆ <sup>5</sup>					◆ <sup>1</sup>			◆ <sup>1</sup>							
Pleasant Valley														◆ <sup>2</sup>							
Polacca (NA)							◆ <sup>1</sup>							◆ <sup>1</sup>							
Quartzite No longer a viable candidate																					
Rolle Airfield														◆ <sup>2</sup>							
Ryan Field	◆ <sup>2</sup>	◆ <sup>1</sup>		◆ <sup>2</sup>		◆ <sup>2</sup>					◆ <sup>2</sup>		◆ <sup>2</sup>	◆ <sup>2</sup>	◆ <sup>2</sup>	◆ <sup>2</sup>	◆ <sup>2</sup>			◆ <sup>2</sup>	◆ <sup>2</sup>
Safford Regional		◆ <sup>10</sup>				◆ <sup>7</sup>		◆ <sup>2</sup>			◆ <sup>2</sup>	◆ <sup>2</sup>	◆ <sup>2</sup>	◆ <sup>2</sup>						◆ <sup>2</sup>	◆ <sup>2</sup>
St. Johns Industrial Airpark		◆ <sup>3</sup>		◆ <sup>7</sup>		◆ <sup>7</sup>					◆ <sup>1</sup>	◆ <sup>3</sup>		◆ <sup>1</sup>	◆ <sup>7</sup>				◆ <sup>7</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>
San Carlos Apache		◆ <sup>9</sup>				◆ <sup>1</sup>					◆ <sup>1</sup>		◆ <sup>1</sup>	◆ <sup>1</sup>				◆ <sup>9</sup>		◆ <sup>7</sup>	
San Manuel														◆ <sup>2</sup>							
Scottsdale				◆ <sup>7</sup>		◆ <sup>7</sup>					◆ <sup>1</sup>	◆ <sup>7</sup>		◆ <sup>1</sup>			◆ <sup>7</sup>		◆ <sup>7</sup>	◆ <sup>2</sup>	◆ <sup>8</sup>
Sedona				◆ <sup>7</sup>		◆ <sup>7</sup>					◆ <sup>1</sup>		◆ <sup>7</sup>	◆ <sup>1</sup>						◆ <sup>7</sup>	◆ <sup>7</sup>
Seligman														◆ <sup>1</sup>							
Sells (NA)														◆ <sup>1</sup>							
Show Low Municipal				◆ <sup>7</sup>		◆ <sup>7</sup>					◆ <sup>1</sup>	◆ <sup>7</sup>		◆ <sup>1</sup>			◆ <sup>7</sup>			◆ <sup>7</sup>	

**LEGEND:**

ILS	Instrument Landing System
NPI	Non Precision Instrument
ALS	Approach Lighting System
REIL	Runway End Identifier Lights
HIRL	High Intensity Runway Lights
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PAPI	Precision Approach Path Indicator
VASI	Visual Approach Slope Indicators
DME	Distance Measuring Equipment
LOC	Localizer
NDB	Non Directional Beacon
RNAV	Area Navigation
VOR	Very High Freq. Omrange
GPS	Global Positioning System
WRS	Weather Reporting System
NA	Native American

**FOOTNOTES:**

1. 5010 Forms
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3. ALP's – Airport Layout Plans
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**TABLE 3-9: Navigational, Lighting, Landing, and Weather Aids (continued)**

AIRPORT NAME	ILS	NPI	ALS	REIL	HIRL	MIRL	LIRL	MITL	REFLECTORS	APRON LTG.	BEACON	PAPI	VASI	WIND SOCK	DME	LOC	NDB	RNAV	VOR	GPS	WRS
Sierra Vista Muni/ Libby AAF	◆ <sup>7</sup>	◆ <sup>3</sup>			◆ <sup>1</sup>	◆ <sup>1</sup>	◆ <sup>1</sup>	◆ <sup>3</sup>			◆ <sup>1</sup>	◆ <sup>1</sup>	◆ <sup>1</sup>	◆ <sup>1</sup>	◆ <sup>9</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>		◆ <sup>7</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>
Stellar Airpark							◆ <sup>8</sup>				◆ <sup>1</sup>		◆ <sup>2</sup>	◆ <sup>1</sup>					◆ <sup>9</sup>	◆ <sup>9</sup>	
Sun Valley				◆ <sup>2</sup>			◆ <sup>5</sup>							◆ <sup>2</sup>							
Superior Municipal													◆ <sup>1</sup>								
Taylor				◆ <sup>7</sup>		◆ <sup>7</sup>					◆ <sup>1</sup>	◆ <sup>7</sup>	◆ <sup>1</sup>						◆ <sup>10</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>
Temple Bar													◆ <sup>2</sup>								
Tombstone Municipal													◆ <sup>2</sup>								
Town of Springerville Municipal		◆ <sup>9</sup>				◆ <sup>7</sup>					◆ <sup>2</sup>	◆ <sup>1</sup>	◆ <sup>7</sup>	◆ <sup>2</sup>			◆ <sup>7</sup>			◆ <sup>2</sup>	
Tuba City (NA)						◆ <sup>5</sup>					◆ <sup>1</sup>	◆ <sup>5</sup>	◆ <sup>1</sup>								
Tucson International	◆ <sup>7</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>		◆ <sup>2</sup>			◆ <sup>2</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>	◆ <sup>2</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>	◆ <sup>10</sup>	◆ <sup>10</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>	◆ <sup>2</sup>
Tuweep													◆ <sup>1</sup>								
Valle Airport		◆ <sup>10</sup>				◆ <sup>10</sup>					◆ <sup>1</sup>		◆ <sup>1</sup>	◆ <sup>10</sup>					◆ <sup>10</sup>	◆ <sup>10</sup>	
Whiteriver (NA)						◆ <sup>5</sup>							◆ <sup>1</sup>								
Wickenburg Municipal				◆ <sup>2</sup>		◆ <sup>5</sup>		◆ <sup>2</sup>			◆ <sup>2</sup>	◆ <sup>5</sup>	◆ <sup>2</sup>						◆ <sup>5</sup>		
Williams Gateway	◆ <sup>7</sup>	◆ <sup>1</sup>	◆ <sup>1</sup>	◆ <sup>3</sup>		◆ <sup>1</sup>					◆ <sup>1</sup>	◆ <sup>1</sup>	◆ <sup>1</sup>	◆ <sup>1</sup>	◆ <sup>1</sup>	◆ <sup>7</sup>		◆ <sup>9</sup>	◆ <sup>7</sup>	◆ <sup>2</sup>	◆ <sup>1</sup>
Window Rock (NA)		◆ <sup>10</sup>		◆ <sup>2</sup>		◆ <sup>7</sup>					◆ <sup>2</sup>	◆ <sup>2</sup>	◆ <sup>2</sup>	◆ <sup>2</sup>	◆ <sup>7</sup>			◆ <sup>7</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>	◆ <sup>2</sup>
Winslow-Lindberg Regional		◆ <sup>9</sup>		◆ <sup>7</sup>		◆ <sup>7</sup>					◆ <sup>3</sup>		◆ <sup>7</sup>	◆ <sup>1</sup>					◆ <sup>7</sup>	◆ <sup>3</sup>	◆ <sup>7</sup>
Yuma International/MCAS Yuma	◆ <sup>7</sup>	◆ <sup>1</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>			◆ <sup>2</sup>			◆ <sup>2</sup>		◆ <sup>7</sup>	◆ <sup>2</sup>	◆ <sup>7</sup>	◆ <sup>7</sup>		◆ <sup>7</sup>	◆ <sup>7</sup>	◆ <sup>2</sup>	◆ <sup>2</sup>

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8. ADOT Aeronautics Division – Navigational Aids and Aviation Services Special Study (November 1998)
9. FAA Datasheet
10. U.S. Terminal Procedures (SW-1, 2001) RNAV Area Navigation

## Air Carrier Activity

Airports in Arizona are serviced by nine major, four national, six regional, and five international scheduled passenger airlines. These airlines are represented in Table 3-10 below. The facilities served by these airlines are designated adjacent to the carrier name. Major carriers are defined by the FAA as those having over one billion dollars in annual operating revenue; a national airline between \$100 million and one billion dollars; and a regional as an airline with less than \$100 million in revenue. Phoenix-Sky Harbor is considered a hub airport for two major airlines, America West and Southwest.

**TABLE 3-10: Scheduled Airlines Serving Arizona**

Majors		Regionals	
1	American Airlines - PSH, T	1	Air Vegas - GC
2	America West Airlines - PSH, T, F, SV, LHC, LB	2	Casino Express - PSH
3	Continental Airlines - PSH, T	3	Mesa Airlines - PSH, T, K, P, Y
4	Delta Airlines - PSH, T	4	Scenic Airlines - PA, PSH, GC
5	Northwest Airlines - PSH, T	5	Sky West - T, Y
6	Trans World Airlines - PSH	6	Sunrise Airlines - SL, PSH
7	United Airlines - PSH, T		
8	US Airways - PSH		
9	Southwest Airlines - PSH, T		
Nationals		International Carriers	
1	Alaskan Airlines - PSH	1	Aero California - T
2	Reno Air - T, LB	2	Aerolitoral - T
3	Frontier Airlines - PSH	3	AeroMexico - PSH
4	American Trans Air - PSH	4	Air Canada - PSH
		5	British Airways - PSH
Cargo Carriers			
1	Federal Express - F, PSH, T		
2	United Parcel Service - F, PSH		
3	Airborne Express - F, T, PSH		
4	Burlington - PSH		
5			
6	Emery Air Freight - PSH, T		
7	U.S. Postal Service - F, PSH		

### Airport Designations:

Flagstaff = F; Grand Canyon = G; Kingman = K; Lake Havasu = LHC; Laughlin-Bullhead = LB; Page = PA; Phoenix = PSH; Prescott = P; Show Low = SL; Sierra Vista = SV; Tucson = T; and Yuma = Y

## Scheduled Airline Routes

Table 3-11 identifies all scheduled non-stop airline service to and from Arizona airports. These flights are organized into “city pairs.” Each city pair represents a non-stop connection between those two. Other destinations are possible from Arizona airports, but only by connecting through another city outside the state. Exhibit 3-6 graphically summarizes these routes.

**TABLE 3-11: Scheduled Airline Routes**

Origin	Destination	Destination
Bullhead City/Laughlin to:	Phoenix, Arizona	
Flagstaff to:	Phoenix, Arizona	
Grand Canyon to:	Phoenix, Arizona	
Havasupai to:	Grand Canyon, Arizona (Helicopter)	
Lake Havasu City to:	Phoenix, Arizona	
Nogales to:	Tucson, Arizona	
Sierra Vista to:	Phoenix, Arizona	
Page to:	Phoenix, Arizona	Las Vegas, Nevada
Phoenix to:	Acapulco, Mexico Albuquerque, New Mexico Aspen, Colorado Atlanta, Georgia Austin, Texas Bakersfield, California Baltimore, Maryland Boston, Massachusetts Bullhead City/Laughlin, Arizona Burbank, California Calgary, Alberta Carlsbad, California Charlotte, North Carolina Chicago, Illinois Cincinnati, Ohio Cleveland, Ohio Colorado Springs, Colorado Columbus, Ohio Dallas/Fort Worth, Texas Denver, Colorado Des Moines, Iowa Detroit, Michigan	Durango, Colorado El Paso, Texas Farmington, New Mexico Flagstaff, Arizona Fresno, California Ft. Huachuca / Sierra Vista, AZ Gallup, New Mexico Grand Junction, Colorado Guadalajara, Mexico

**TABLE 3-11: Scheduled Airline Routes (continued)**

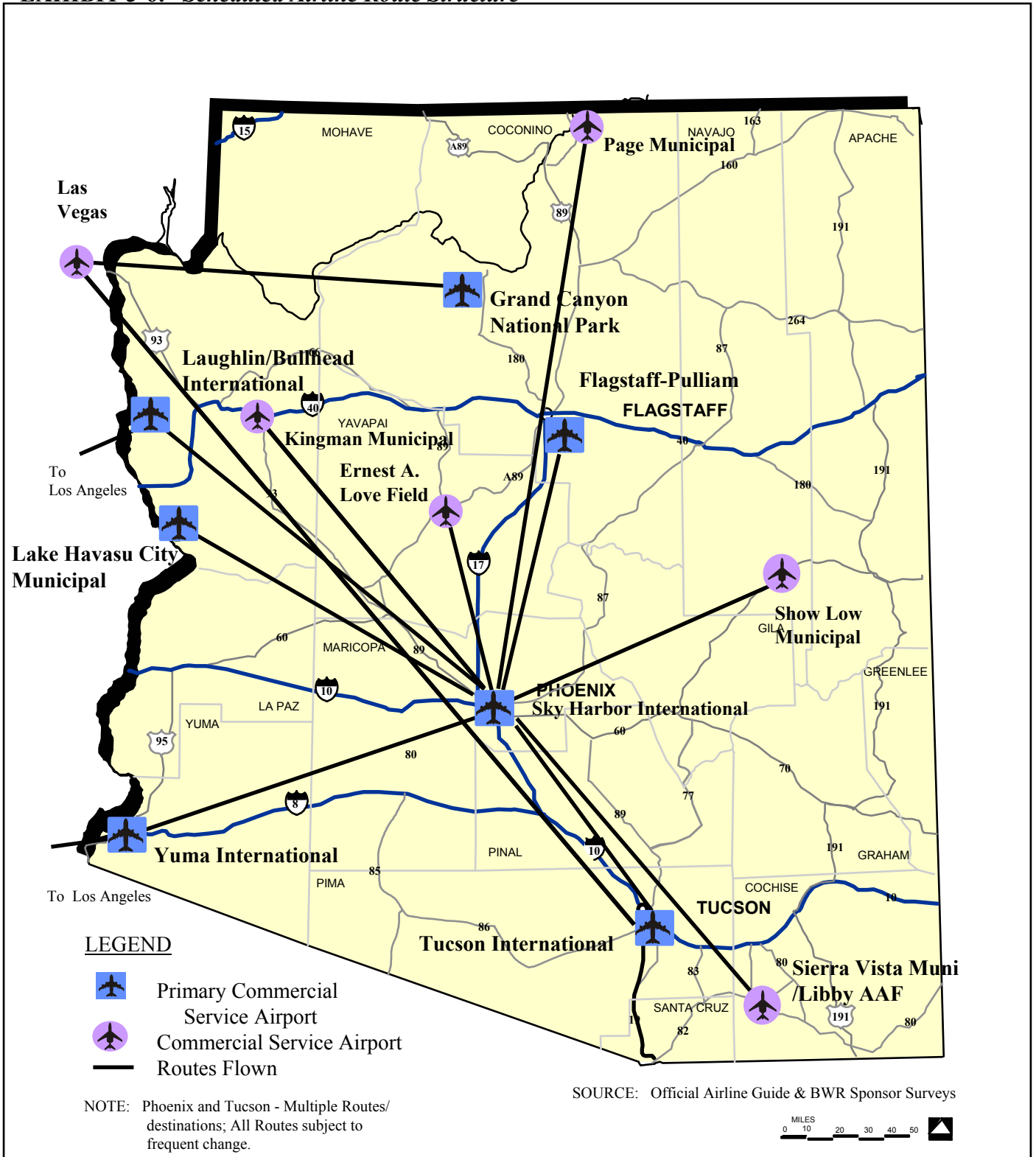
Origin	Destination	Destination
Phoenix to:	Guaymas, Mexico	Puerto Vallarta, Mexico
	Hermosillo, Mexico	Reno, Nevada
	Honolulu, Hawaii	Sacramento, California
	Houston, Texas	St. Louis, Missouri
	Indianapolis, Indiana	Salt Lake City, Utah
	Ixtapa/Zihuataneho, Mexico	San Antonio, Texas
	Kahului, Maui, Hawaii	San Diego, California
	Kansas City, Missouri	San Francisco, California
	Kingman, Arizona	San Jose, California
	Lake Havasu City, Arizona	San Luis Obispo, California
	Las Vegas, Nevada	Santa Barbara, California
	Little Rock, Arkansas	Seattle/Tacoma, Washington
	Long Beach, California	Show Low, Arizona
	Los Angeles, California	Tampa Bay, Florida
	Los Cabos, Mexico	Telluride, Colorado
	Louisville, Kentucky	Toronto, Ontario
	Mazatlan, Mexico	Tucson, Arizona
	Mexico City, Mexico	Tulsa, Oklahoma
	Miami, Florida	Vancouver, British Columbia
	Midland/Odessa, Texas	Washington, D.C.
	Milwaukee, Wisconsin	Wichita, Kansas
	Minneapolis/St. Paul, Minnesota	Yuma, Arizona
	Monterey, California	
	Montrose, Colorado	
	Nashville, Tennessee	
	New Orleans, Louisiana	
	JFK, NY/ Newark, New Jersey	
	Oakland, California	
	Oklahoma City, Oklahoma	
	Omaha, Nebraska	
	Ontario, California	
	Orange County, California	
	Orlando, Florida	
	Page, Arizona	
	Palm Springs, California	
	Philadelphia, PA	
	Pittsburgh, PA	
	Portland, Oregon	



**TABLE 3-11: Scheduled Airline Routes (continued)**

Origin	Destination	Destination
Prescott to:	Phoenix, Arizona	
Show Low to:	Phoenix, Arizona	
Tucson to:	Albuquerque, New Mexico Chicago, Illinois Cincinnati, Ohio Dallas/Fort Worth, Texas Denver, Colorado Hermosillo, Mexico Houston, Texas Las Vegas, Arizona Los Angeles, California Minneapolis/St. Paul, Minnesota Phoenix, Arizona Salt Lake City, Utah San Diego, California	
Yuma to:	Los Angeles, California Phoenix, Arizona	

Sources: Official Airline Guide April 1999 and Airport Sponsor Questionnaires

**EXHIBIT 3-6: Scheduled Airline Route Structure**

## Passenger Enplanements

Passenger enplanements are defined as the number of revenue passengers boarding aircraft and includes originating, stop-over and transfer passengers. The total number of passenger enplanements for the state in 1998 was 18,439,667. This represents a 30% increase from the 12,870,100 enplanements from 1992 as listed in the SANS 1995. The largest percentage of these enplanements continues to occur at Phoenix-Sky Harbor. Their almost 16,000,000 enplanements account for 86% of the state's total in 1998.

Table 3-12 presents historical enplanements for the state by airport.

**TABLE 3-12: Arizona's Historical Passenger Enplanements – Air Carrier Airports**

Year	State Total	Bullhead City/ Laughlin <sup>1</sup>	Flagstaff	Grand Canyon	Kingman	Lake Havasu City	Page
1988	11,325,082	29,969 <sup>1</sup>	47,000 <sup>2</sup>	179,000 <sup>2</sup>	1,000 <sup>2</sup>	13,000 <sup>2</sup>	4,000 <sup>2</sup>
1989	12,173,656	47,830 <sup>1</sup>	51,000 <sup>2</sup>	357,000 <sup>2</sup>	0 <sup>2</sup>	28,000 <sup>2</sup>	3,000 <sup>2</sup>
1990	12,802,169	45,923 <sup>1</sup>	47,400 <sup>2</sup>	381,100 <sup>2</sup>	2,600 <sup>2</sup>	22,900 <sup>2</sup>	4,400 <sup>2</sup>
1991	12,961,382	35,921 <sup>1</sup>	45,800 <sup>2</sup>	383,000 <sup>2</sup>	2,000 <sup>2</sup>	13,900 <sup>2</sup>	4,500 <sup>2</sup>
1992	12,864,915	38,068 <sup>1</sup>	46,600 <sup>2</sup>	452,900 <sup>2</sup>	2,900 <sup>2</sup>	11,200 <sup>2</sup>	4,700 <sup>2</sup>
1993	13,736,149	97,095 <sup>1</sup>	41,958 <sup>3</sup>	501,846 <sup>3</sup>	3,505 <sup>3</sup>	13,428 <sup>3</sup>	15,133 <sup>3</sup>
1994	15,122,806	74,194 <sup>1</sup>	38,281 <sup>3</sup>	509,592 <sup>3</sup>	3,714 <sup>3</sup>	12,137 <sup>3</sup>	19,067 <sup>3</sup>
1995	16,258,616	118,484 <sup>1</sup>	37,769 <sup>3</sup>	507,648 <sup>3</sup>	3,459 <sup>3</sup>	11,358 <sup>3</sup>	19,897 <sup>3</sup>
1996	17,383,338	116,907 <sup>1</sup>	43,294 <sup>3</sup>	445,162 <sup>3</sup>	1,602 <sup>3</sup>	11,073 <sup>3</sup>	16,736 <sup>3</sup>
1997	17,502,459	64,094 <sup>1</sup>	44,565 <sup>3</sup>	553,867 <sup>3</sup>	1,801 <sup>3</sup>	11,854 <sup>3</sup>	10,859 <sup>3</sup>
1998	18,439,667	30,387 <sup>1</sup>	39,573	512,365	3,500	9,633	27,000
Year	Phoenix Sky Harbor	Prescott	Scottsdale	Show Low	Sierra Vista	Tucson	Yuma
1988	9,537,000	8,113 <sup>4</sup>	5,000 <sup>2</sup>	0 <sup>2</sup>	0 <sup>2</sup>	1,427,000 <sup>2</sup>	74,000 <sup>2</sup>
1989	10,269,000	8,826 <sup>4</sup>	11,000 <sup>2</sup>	0 <sup>2</sup>	0 <sup>2</sup>	1,338,000 <sup>2</sup>	60,000 <sup>2</sup>
1990	10,877,500	9,946 <sup>4</sup>	200 <sup>2</sup>	200 <sup>2</sup>	15,200 <sup>2</sup>	1,329,800 <sup>2</sup>	65,000 <sup>2</sup>
1991	11,111,400	5,714 <sup>4</sup>	100 <sup>2</sup>	0 <sup>2</sup>	8,500 <sup>2</sup>	1,218,400 <sup>2</sup>	60,900 <sup>2</sup>
1992	10,958,300	9,847 <sup>4</sup>	10,200 <sup>2</sup>	2,900 <sup>2</sup>	9,100 <sup>2</sup>	1,254,600 <sup>2</sup>	63,600 <sup>2</sup>
1993	11,657,100	12,891 <sup>4</sup>	7,856 <sup>3</sup>	2,831 <sup>3</sup>	12,983 <sup>3</sup>	1,305,100	64,423 <sup>5</sup>
1994	12,726,855 <sup>3</sup>	13,214 <sup>4</sup>	6,759 <sup>3</sup>	3,294 <sup>3</sup>	11,732 <sup>3</sup>	1,638,342	65,625 <sup>5</sup>
1995	13,738,433 <sup>3</sup>	10,256 <sup>4</sup>	6,368 <sup>3</sup>	3,151 <sup>3</sup>	10,286 <sup>3</sup>	1,720,537	70,970 <sup>5</sup>
1996	14,885,372 <sup>3</sup>	10,734 <sup>3</sup>	3,061 <sup>3</sup>	3,525 <sup>3</sup>	12,786 <sup>3</sup>	1,759,495 <sup>3</sup>	73,591 <sup>5</sup>
1997	14,940,339 <sup>3</sup>	8,634 <sup>3</sup>	254 <sup>3</sup>	1,300 <sup>3</sup>	11,938 <sup>3</sup>	1,775,566 <sup>3</sup>	76,788 <sup>5</sup>
1998	15,984,620	8,366	8,000	2,000	9,822	1,735,118	69,283

Sources: (1) Laughlin/Bullhead City Master Plan 1999

(3) FAA ACAIS Database

(5) Yuma Int'l Master Plan 1998

(2) 1995 State Aviation Needs Study

(4) Love Field Master Plan 1998

## Air Cargo

Table 3-13 explores historical cargo volume transported through the aviation system. Most of the flow is directed through Phoenix-Sky Harbor and Tucson International. Other facilities provide cargo services on a limited basis.

**Table 3-13: Historical Air Cargo Data – 1988-1998 in Total Tons**

Year	Phoenix Sky Harbor International	Tucson International	Yuma
1988	100,685	14,774	Not Available
1989	104,196	17,516	Not Available
1990	125,951	18,824	Not Available
1991	150,451	13,669	Not Available
1992	178,035	16,372	Not Available
1993	203,671	17,536	2,204
1994	257,418	16,398	1,179
1995	286,666	21,523	1,090
1996	312,751	20,369	788
1997	347,163	25,232	1,246
1998	366,463	26,478	1,608

Source: Years 1988-1998, Arizona Department of Transportation.  
Yuma International – Personnel Interview (10-13-99)

## General Aviation

The category of general aviation encompasses a wide array of civilian activity except that of air carriers certified in accordance with Federal Aviation Regulations (FAR). Many types of aircraft are used in general aviation. Corporate multi-engine jet aircraft, single piston airplanes, ultralights, balloons and gliders are a few of these types.

General aviation facilities comprise the majority of the airports in Arizona. Commercial services are offered at a limited number of sites, so general aviation facilities tend to fill the void. General aviation offers certain aviation services that commercial aviation providers cannot or will not provide. Flight schools, air taxi operators, and fixed base operators are all dependent on adequate general aviation services.

Indicators of a healthy general aviation system include the number of pilots and based aircraft, fleet mix, and annual operations. The following tables summarize these data for the past 10 years.

## Pilots

Table 3-14 provides the historical numbers of Arizona registered airmen. The trend revealed in the SANS 1995, whereby the number of registered aircraft per pilot was decreasing, still continues. The rate has slowed somewhat in recent years and even seen an increase in 1996. The logic of this reduction being related to increased students at flight schools and fewer recreational pilots remains justified.

**TABLE 3-14: Arizona's Historical Registered Airmen 1988-1998**

Year	Registered Airmen	Registered Aircraft	Registered Airmen Per Registered Aircraft
1988	15,072	6,194	2.43
1989	15,815	6,354	2.48
1990	16,219	6,307	2.57
1991	16,364	6,317	2.59
1992	15,883	6,301	2.52
1993	15,324	6,441	2.38
1994	15,493 (E)	7,059	2.19
1995	15,662	7,085	2.21
1996	15,298	7,485	2.04
1997	16,729	7,420	2.25
1998	16,828	7,794	2.16

Sources: FAA U.S. Airmen Civil Statistics, 1997.  
 ADOT Aeronautics Division Database  
 (E) - Estimated

### Registered Aircraft

In addition to being the most populous, Maricopa and Pima Counties also are the primary base points for aircraft in Arizona. Table 3-15 provides the county-by-county breakdown of aircraft ownership in the state from 1988 to 1998.

As shown in the table, a major downturn in registered aircraft occurred in 1992 and continued in 1993. This trend seems to be reversing itself and the numbers have gradually increased over the past three years. The numbers achieved in the late 1980's have yet to be obtained, but this trend is seen as a positive step for the industry.

**TABLE 3-15: Arizona Registered Aircraft by County 1988-1998**

Counties	Years										
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
State	6,194	6,354	6,307	6,317	6,301	6,441	7,041	7,059	7,485	7,420	7,794
Apache	66	63	57	50	52	48	52	53	51	45	47
Cochise	199	194	181	174	175	182	194	196	210	202	220
Coconino	265	262	256	249	253	261	284	287	302	272	300
Gila	84	85	93	99	96	106	111	113	112	100	112
Graham	39	38	37	34	34	34	30	30	35	32	33
Greenlee	5	3	3	3	3	3	4	4	5	7	10
La Paz	63	71	78	79	78	73	76	75	80	74	78
Maricopa	3,366	3,361	3,422	3,407	3,372	3,435	3,733	3,736	3,997	4,071	4,216
Mohave	272	272	286	316	326	349	383	379	410	402	419
Navajo	81	85	88	106	106	100	118	120	127	124	153
Pima	919	919	918	909	932	972	1,079	1,083	1,122	1,110	1,131
Pinal	228	236	245	228	235	218	247	249	269	248	272
Santa Cruz	43	39	41	43	43	48	49	47	44	42	52
Yavapai	332	359	392	419	401	406	451	453	479	457	513
Yuma	228	224	209	200	194	205	230	233	242	234	238
Unspecified	4	143	1	1	1	1	0	1	0	0	0

Source: Census of U.S. Registered Aircraft, U.S. Dept. of Transportation  
FAA Archive

## Fleet Mix

Aircraft fleet mix trends for the period 1988 to 1998 are illustrated in Table 3-16. From reviewing the data, it appears the general fleet mix has remained relatively steady. Some fluctuation in the numbers of single-engine piston aircraft has occurred and there have been slight increases in multi-engine piston craft.

**TABLE 3-16: Arizona Registered Aircraft Fleet Mix 1988-1998**

Year	Total FAA Registered Aircraft	Single-Engine Piston	Multi-Engine Piston	Turboprop	Turbojet	Rotorcraft	Others
1988	6,194	4,806	614	95	51	235	393
1989	6,354	4,931	629	108	52	245	389
1990	6,307	4,926	599	102	45	241	394
1991	6,317	4,914	623	95	51	254	380
1992	6,301	4,982	606	92	59	257	395
1993	6,441	5,006	603	99	63	281	389
1994	7,041	N/A	N/A	N/A	N/A	N/A	N/A
1995	7,059	N/A	N/A	N/A	N/A	N/A	N/A
1996	7,485	N/A	N/A	N/A	N/A	N/A	N/A
1997	7,420	N/A	N/A	N/A	N/A	N/A	N/A
1998	7,794	N/A	N/A	N/A	N/A	N/A	N/A

Source: Census of U.S. Registered Aircraft, U.S. Dept. of Transportation

## Operations

The taking off or landing of an aircraft is termed an “operation.” As expected, the largest number of operations occurs in Maricopa County. It has the largest population and the greatest number of based aircraft. The top ten airports in Arizona based on annual operations are listed in Table 3-17.

**TABLE 3-17: Arizona’s 10 Most Active Airports – Total Operations (1998)**

Airport	County	Annual Operations
Phoenix Sky Harbor Int'l	Maricopa	537,822
Love Field, Prescott	Yavapai	353,299
Phoenix Deer Valley	Maricopa	281,124
Tucson International	Pima	266,428
Williams Gateway	Maricopa	228,313
Falcon Field	Maricopa	220,969
Scottsdale	Maricopa	182,153
Grand Canyon National Park	Coconino	164,179
Ryan Field	Pima	157,659
Phoenix Goodyear	Maricopa	157,250

Source: SANS 2000 Airport Sponsor Surveys and FAA 5010 Forms

## Rural Health Care Delivery/Air Ambulance Service

Given Arizona’s vast land area and the remoteness of certain locations in the state, aviation plays an important role in the provision of ample medical services. Whether it is the delivery of health care to rural, under-served areas, patient transport between medical facilities; or the emergency transport of accident and critical patients, sufficient aviation capabilities can be the difference between life or death. Arizona’s air ambulance needs are provided by both rotorcraft and fixed-wing aircraft.

Numerous healthcare facilities in the state maintain private heliports. Several airports also fulfill the need for medical services by providing landing areas for air ambulances. Those facilities offering such services are listed in Table 3-18.

**TABLE 3-18: Air Ambulance Service**

Facility	Frequency	Provider
Bagdad Airport	Occasionally	N/A
Buckeye Municipal	Occasionally	Good Samaritan Med Evac
Cochise County	1080 times per year	Critical Air Medicine; Air Cart
Colorado City	6 times per year	Air Ambulance; Guardian Air
Douglas Municipal	50 times per year	Air Care
Flagstaff-Pulliam	1000 times per year	C-421, PC-12, King Air
Glendale Municipal	N/A	Air Evac, Life Net
Greenlee	N/A	Ai Ambulance
Kearney	N/A	Life Net
Phoenix Sky Harbor Int'l	N/A	Air Evac
Page Municipal	200 times per year	N/A
Pleasant Valley Airstrip	N/A	N/A
Safford Regional	600 times per year	King Air
Sedona	N/A	Air Evac
Scottsdale	N/A	Air Evac
Show Low Municipal	210 times per year	Life Rescue, King Air, Medical Express
Sierra Vista Municipal	100 times per year	Tucson Medical Group
Seligman	N/A	N/A
Tempe Bar	N/A	N/A
Wickenburg Municipal	Occasionally	Med-Evac
Williams Gateway	N/A	Native American Air Ambulance
Window Rock Airport	N/A	All providers in AZ & NM
Yuma International/MCAS Yuma	1000 times per year	Advanced Life Support Transport

Source: SANS 2000 Airport Sponsor Surveys

**LEGEND:**

N/A = Not Applicable

**Military Activity**

There are four active military air bases in Arizona and two joint civilian/military use facilities. These facilities are listed in Table 3-19. In addition to these sites, the Arizona Air National Guard utilizes Libby AAF/Sierra Vista, Phoenix-Sky Harbor, and Tucson International.

**TABLE 3-19: Arizona Military Facilities**

Facility	Location
Davis / Monthan Air Force Base (AFB)	Tucson
Laguna Army Air Field (AAF)	Yuma
Libby Army Air Field (AAF) / Sierra Vista Municipal	Fort Huachuca / Sierra Vista
Luke Air Force Base (AFB)	Glendale
Papago Army Air Field (AAF)	Phoenix
Yuma Marine Corps Air Station (MCAS) / Yuma International	Yuma



## Airspace and NAVAIDs

The airspace structure in the United States is either uncontrolled (Class G Airspace) or controlled (Class A, B, C, D, or E Airspace). Uncontrolled airspace is defined as all airspace that has not been designated as controlled, and within which Air Traffic Control (ATC) has neither the authority nor responsibility for control. Controlled airspace, however, is supported by ground/air communications, navigational aids, and air traffic services. Controlled airspace consists of those areas designated as *Positive Control Area (Class A)*, *Terminal Control Areas (Class B)*, *Airport Radar Service Areas (Class C)*, *Airport Traffic Areas and Control Zones (Class D)*, and *General Controlled Airspace and Transition Areas (Class E)*, within which some or all aircraft may be subject to ATC. Virtually all air space above 18,000 feet mean sea level is considered Class A controlled. Airspace under that altitude can be either controlled or uncontrolled, depending on the air traffic density, proximity to an airport, and geographic factors.

Class D airspace has a radius of 4.3 nautical miles and a ceiling of 2,500 feet, and requires all aircraft to be subject to ATC clearances and instructions.

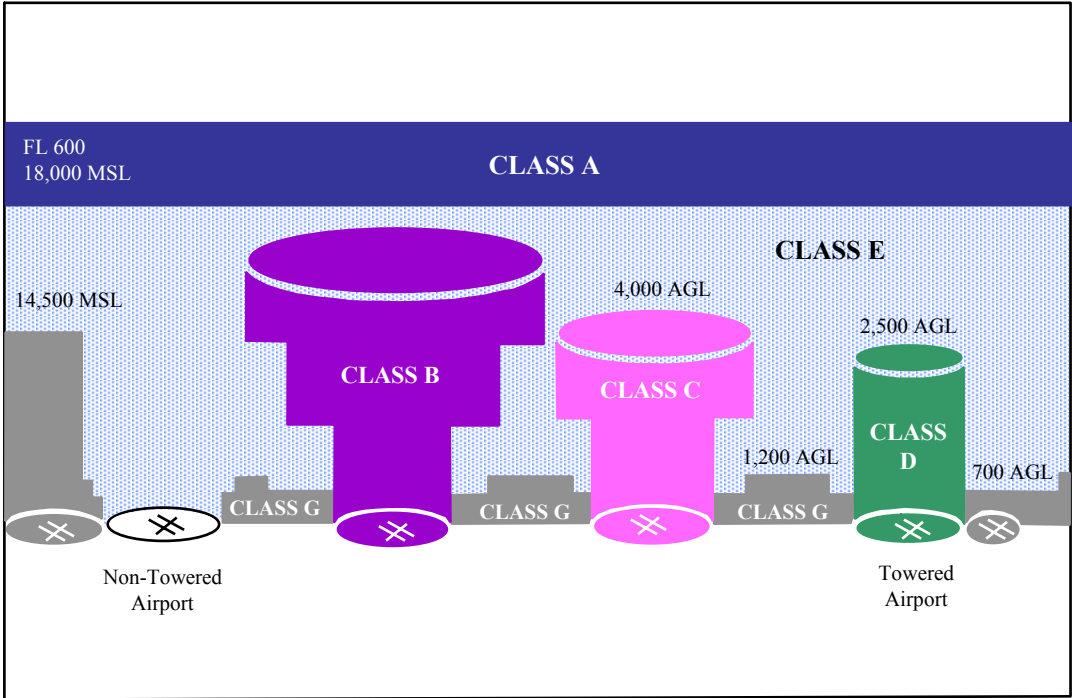
In Class E airspace, operations may be conducted under Instrument Flight Rules (IFR), Visual Flight Rules (VFR), or special VFR (SVFR). Air Traffic Control (ATC) separation is provided only to aircraft operating under IFR and SVFR within surface areas.

Another category of controlled airspace is designated ***Special Use***. Special use airspace consists of that airspace where limitations are imposed on aircraft operations usually because of military activity. Special use airspace is classified as Restricted Areas, Military Operation Areas, and Prohibited Areas. Restricted Areas are military related or have tethered radar balloons and related equipment. When active, Restricted Areas are closed to over-flight up to specified flight levels. Military operating areas (MOA) are also associated with military training, but can allow through-flight when in use. Extreme caution is advised when traversing an active MOA.

SFAR No. 50-2 *Special Flight Rules In The Vicinity Of The Grand Canyon National Park, AZ*. This rule pertains to the Grand Canyon National Park, which prohibits all persons operating aircraft inside the boundary of the restricted airspace, and extends upward from the surface to 14,500 feet MSL.

Exhibit 3-7 presents an illustration of Controlled Airspace, while Exhibit 3-8 shows the state's airways and special use airspace.

EXHIBIT 3-7: Controlled Airspace - U.S. Airspace Classes

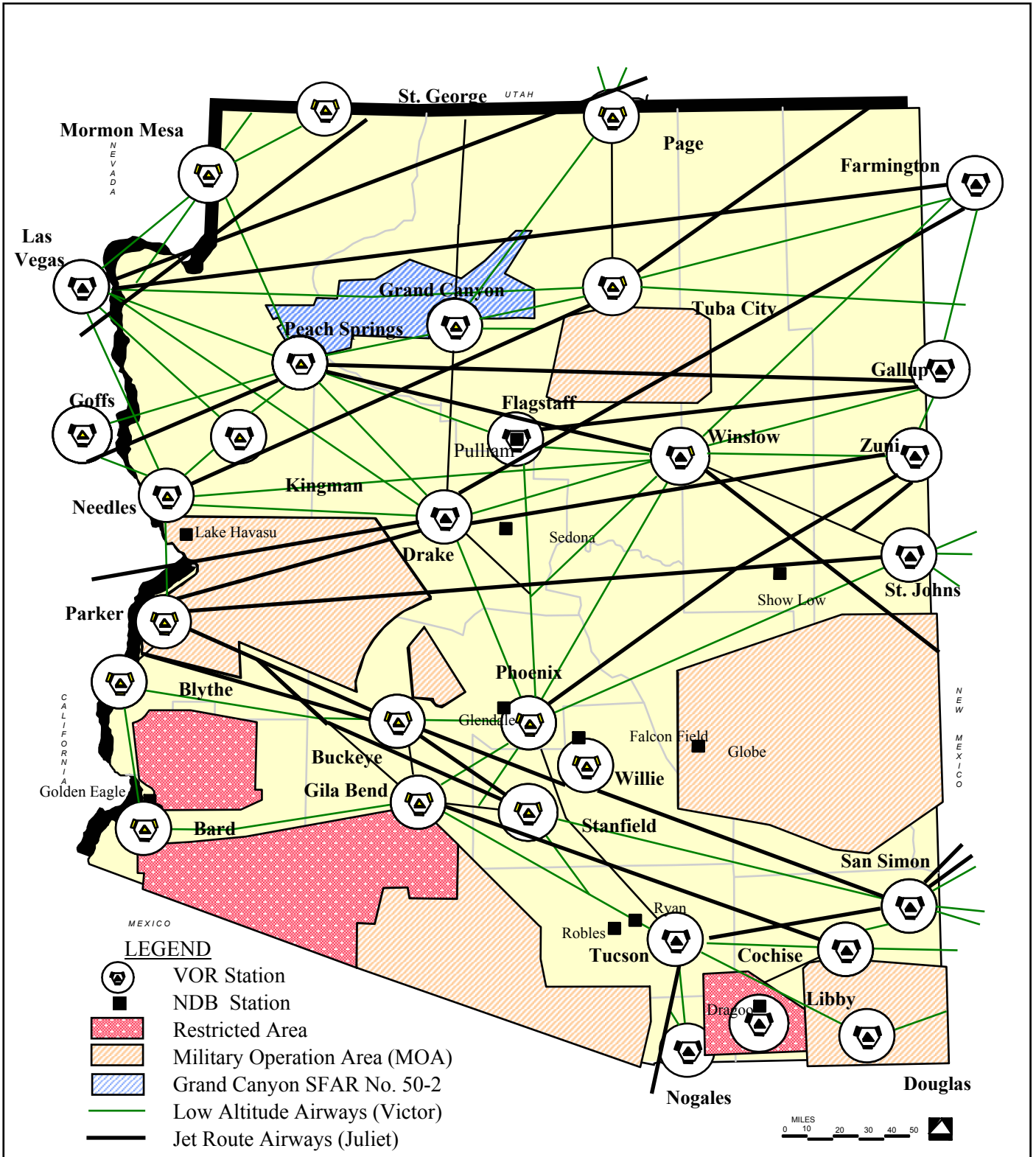


Airspace Classes	Former Airspace Equivalents	Changes
A	Positive Control Area (PCA)	None
B	Terminal Control Area (TCA)	VFR: Clear of Clouds
C	Airport Radar Service Area (ARSA)	None
D	Airport Traffic Area (ATA) and Control Zone (CZ)	Upper Limits 2,500' AGL
E	General Controlled Airspace	None
G	Uncontrolled Airspace	None

LEGEND

AGL Above Ground Level  
FL Flight Level  
MSL Mean Sea Level

SOURCE: Federal Aviation Administration

**EXHIBIT 3-8: Airways and Special Use Airspace**

**SOURCE:** Aeronautical Charts; U.S. Department of Commerce

## **Protected Airspace Areas**

Separations between aircraft under both VFR and IFR conditions and obstructions are normally provided for around each airport. The areas of protected airspace and the obstruction clearance requirements vary according to the type of approach or missed approach, the category of aircraft involved, the location and type of navigational aids, and other factors. In addition, airspace for airwaves, holding patterns, and transition and departure routes must be protected.

The FAA provides recommended planning guidelines for establishing areas of protected airspace for airport traffic patterns. Where these areas overlap, procedures and restrictions for sharing the overlapping airspace between the airports and resolving potential airspace interactions may need to be developed. For airports with control towers, the necessary procedures are specified in letters of agreement between the facilities. For airports without towers, traffic pattern altitudes and directions and various arrival and departure procedures (including noise abatement procedures) may be specified in various FAA and airport management directives and publications.

Typical IFR traffic patterns require a rectangle of protected airspace that may be as much as 8 miles by 20 miles for aircraft Categories A and B, and 10 miles by 30 miles for aircraft Categories C and D. Traffic pattern dimensions are not specified for approach Category E aircraft.

The recommended protected airspace areas for VFR traffic patterns are much smaller, but also vary according to the type of aircraft. For example, Category B aircraft require a rectangle of protected airspace 1.75 nautical miles (nm) by 4 nm, whereas Category D aircraft require a rectangle of protected airspace 4.5 nm by 8 nm.

### Phoenix Airspace

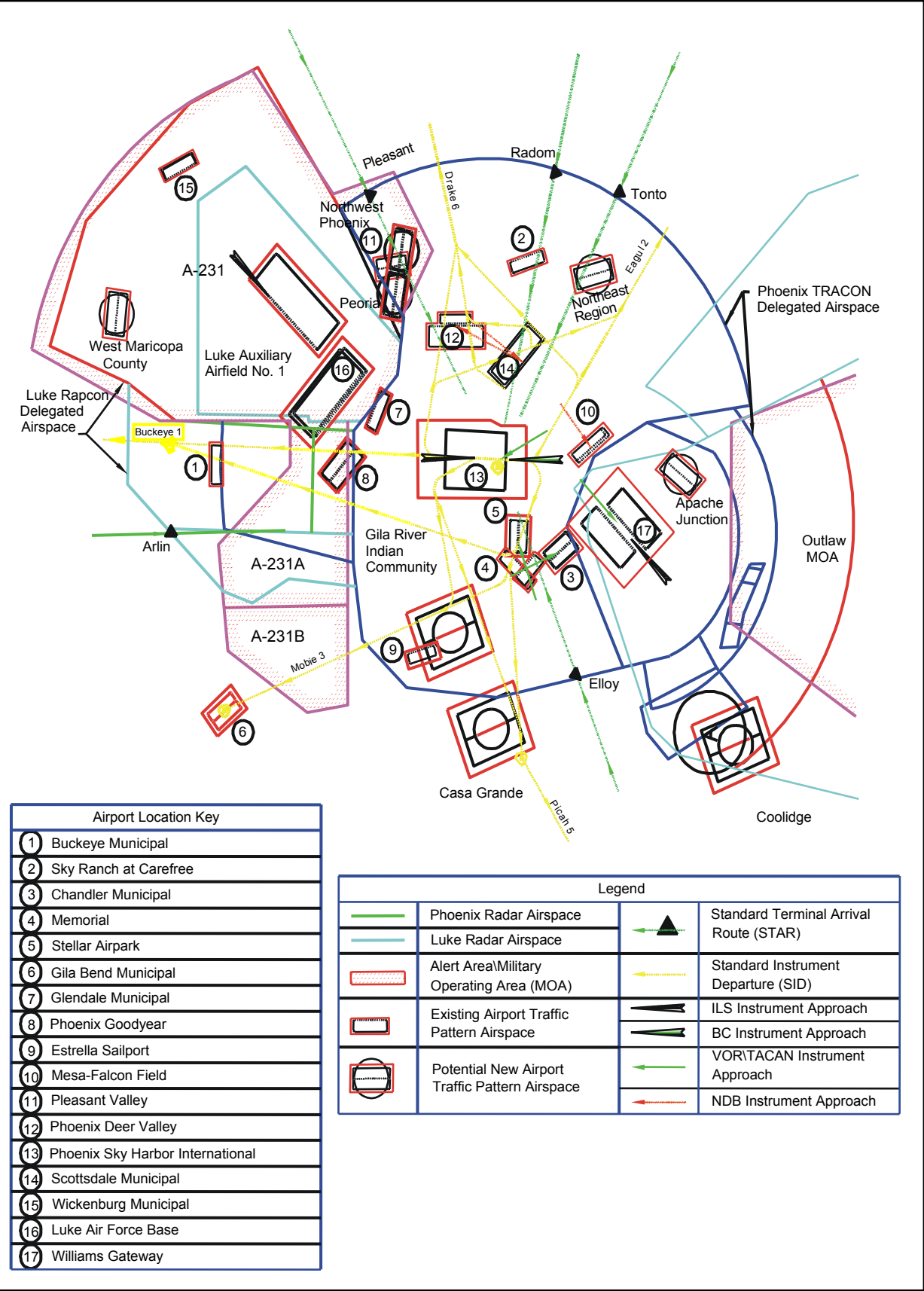
By far the most complex airspace environment in the state is that within the Phoenix area. The airspace over Phoenix accommodates a wide range of aircraft types and aviation activities, both civilian and military.

Within the Phoenix area, there are three major jurisdictional categories of airspace for ATC purposes, each with its own designated volume of airspace. These categories of airspace and the facilities that control them are as follows:

- Air Route Traffic Control Center (ARTCC) Airspace (Albuquerque Center)
- Terminal Radar Approach Control (TRACON) Airspace (Phoenix TRACON)
- Airport Traffic Control Tower Airspace (Phoenix-Deer Valley Airport, Mesa-Falcon Field, Phoenix-Goodyear Municipal Airport, Luke Air Force Base, Phoenix Sky Harbor International Airport, and Scottsdale Municipal Airport).

ATC facilities control aircraft within their delegated airspace, in accordance with rules prescribed in various Federal Aviation Regulations (FAR), FAA Handbook 7110.65C, and other directives, letters of agreement, notices, and order. Exhibit 3-9 graphically details the Phoenix airspace.

EXHIBIT 3-9: Phoenix Airspace



SOURCE: Federal Aviation Administration

## **Enroute Airways System and NAVAIDs**

Flights within the United States are normally channeled along navigational routes that are as well defined as the surface road system. These airspace structures are a key element in state traffic flows in that the preponderance of operations is related to the transitioning of aircraft between these airways and the study area airports. Three route systems are now in use:

- VOR Airway System,
- Jet Route System,
- Area Navigation (RNAV) System, and
- Global Positioning System.

### VOR Airway System

VOR (very high frequency omni-directional range) airways, also known as Victor airways, are a low-altitude system consisting of airways from 1,200 feet above the surface up to, but not including, 18,000 feet above mean sea level (MSL). The VOR system uses an alphanumeric code, with V followed by a number, for example, V21. These airways use only VOR/VORTAC navigational aids. Victor airways are a minimum of eight nautical miles wide. When the distance between VOR stations is greater than 120 miles, the airway width increases to the envelope encompassed by planes at an angle of 4-1/2 degrees about the centerline joining the two ground stations.

### The Jet Route System

Airways from 18,000 feet above mean sea level (MSL) to 45,000 feet, or flight level (FL) 450, designed for aircraft that customarily operate at these altitudes compose the jet route system. These routes also operate using VOR ground navigation stations, but the system requires significantly fewer stations, since line-of-sight operation gives the VORs substantially greater range when serving aircraft at high altitudes. The width of the airways of the jet route system is similar to that of the Victor airways. Navigation through the jet route system requires the use of Enroute High Altitude Charts.

### Area Navigation (RNAV) System

RNAV is a method of navigation that permits aircraft operations on any desired course within the coverage of station-referenced navigation signals or within the limits of a self-contained system capability, between waypoints defined in terms of latitude/longitude coordinates, degree/distance fixes, or offsets from published or established routes/airways at specified distances and directions. Major types of equipment include VORTEC, OMEGA/VCF, INS, MLS/RNAV, and LORAN-C.

### Global Positioning System

The global positioning system (GPS) uses a constellation of many satellites orbiting the earth to instantly and accurately determine the position of users on or above the surface. By using satellite-transmitted radio signals and triangulation algorithms in the receiver, the exact position of the user can be determined to 100 meters or less, depending upon the type of receiver used. With this newly available technology, GPS will soon replace ground based navigation systems in a transition that is already starting. When GPS has achieved full operational capacity, it will provide non-precision approach capability to most airports with existing instrument approaches.

### 3.6 FINANCIAL DATA

Airports in Arizona are funded at the federal, state, and local levels. Generally, federal funds are allocated on the condition that the state and the local community provide a certain percentage of the total anticipated project budget. For example, federal funds may pay for 90 percent of a project, while state and local funds split the remaining 10 percent. Where no federal funds are involved, the state may finance the 90 percent and the local share will be 10 percent.

#### Arizona's Capitol Improvement Program

Arizona's Five-Year Airport Development Program, produced by the Aeronautics Division, shows proposed projects in each county and the amount of funding at the local, state, and federal levels. Based on the current federal AIR-21 program and anticipated State funding for the five fiscal year period between 2000-2005, nearly \$389 million has been programmed for Arizona's airports. Of the total, \$324.3 million would come from federal government funds, and over \$64.7 million will need to come from Arizona State's funds. Table 3-20 shows the programmed dollars for the 1999-2000 fiscal year by airport.

**Table 3-20: State Capital Improvement Program 1999-2000**

<i>Commercial Service / Reliever Airports Projects Funding</i>					
<b>Airport</b>	<b>County</b>	<b>State Amount</b>	<b>Local Amount</b>	<b>Federal Amount</b>	<b>Total Amount</b>
Chandler Municipal	Maricopa	\$336,436	\$94,836	\$1,316,728	\$1,748,000
Flagstaff-Pulliam	Coconino	\$556,808	\$201,252	\$3,194,385	\$3,952,445
Glendale Municipal	Maricopa	\$722,968	\$179,857	\$2,280,932	\$3,183,756
Grand Canyon	Coconino	\$1,097,959	\$201,959	\$1,832,583	\$3,132,500
Kingman	Mohave	\$23,468	\$23,468	\$478,065	\$525,000
Lake Havasu City Muni.	Mohave	\$93,078	\$93,078	\$1,896,124	\$2,082,280
Laughlin/Bullhead Int'l	Mohave	\$916,362	\$132,362	\$700,000	\$1,748,724
Falcon Field	Maricopa	\$1,007,999	\$112,000	\$0	\$1,119,999
Page Municipal	Coconino	\$69,244	\$69,244	\$1,410,600	\$1,549,089
Phoenix Deer Valley	Maricopa	\$1,070,580	\$174,580	\$1,274,840	\$2,520,000
Phoenix Goodyear	Maricopa	\$270,000	\$30,000	\$0	\$300,000
Phoenix Sky Harbor	Maricopa	\$2,002,000	\$1,118,000	\$6,000,000	\$9,120,000
Prescott-Love Field	Yavapai	\$1,078,179	\$182,179	\$1,429,642	\$2,690,000
Scottsdale	Maricopa	\$1,071,815	\$175,815	\$1,300,000	\$2,547,630
Sedona	Yavapai	\$51,629	\$51,629	\$1,051,743	\$1,155,000
Show Low Municipal	Navajo	\$729,000	\$81,000	\$0	\$810,000
Sierra Vista Municipal / Libby A.A.F.	Cochise	\$146,017	\$50,017	\$774,465	\$970,500
Ryan Field	Pima	\$1,008,000	\$112,000	\$0	\$1,120,000
Tucson-International	Pima	\$1,170,876	\$274,876	\$3,318,000	\$4,763,751
Yuma International	Yuma	\$1,032,544	\$136,544	\$500,000	\$1,669,089
<b>SUBTOTAL</b>		<b>\$14,454,962</b>	<b>\$3,494,696</b>	<b>\$28,758,107</b>	<b>\$46,707,763</b>

Source: ADOT Aeronautics Division, Five Year Airport Development Program 2000-2004

**TABLE 3-20: State Capital Improvement Program 1999-2000 (continued)**

<i>Public Airports Projects Funding</i>					
<b>Airport</b>	<b>County</b>	<b>State Amount</b>	<b>Local Amount</b>	<b>Federal Amount</b>	<b>Total Amount</b>
Benson Municipal	Cochise	\$1,565	\$1,565	\$31,871	\$35,000
Bisbee-Douglas Int'l	Cochise	\$81,047	\$81,047	\$1,651,043	\$1,813,137
Casa Grande Municipal	Pinal	\$216,450	\$24,050	\$0	\$240,500
Cochise College	Cochise	\$45,000	\$5,000	\$0	\$50,000
Cochise County	Cochise	\$459,000	\$51,000	\$0	\$510,000
Coolidge Municipal	Pinal	\$9,611	\$9,611	\$195,799	\$215,000
Cottonwood Municipal	Yavapai	\$61,830	\$6,870	\$0	\$68,700
Duncan Municipal	Greenlee	\$422,750	\$22,250	\$0	\$445,000
Eloy Municipal	Pinal	\$5,717	\$5,717	\$116,466	\$127,900
Greenlee County	Greenlee	\$13,990	\$13,990	\$285,000	\$312,980
Marana NW Regional	Pima	\$1,008,000	\$112,000	\$0	\$1,120,000
Nogales International	Santa Cruz	\$172,526	\$83,637	\$1,477,449	\$1,733,611
Payson	Gila	\$26,820	\$26,820	\$546,360	\$600,000
Safford Regional	Graham	\$30,173	\$30,173	\$614,655	\$675,000
Seligman	Yavapai	\$1,008,000	\$53,053	\$0	\$1,061,053
Town of Springerville Municipal	Apache	\$99,000	\$11,000	\$0	\$110,000
St. Johns Industrial Airpark	Apache	\$27,938	\$27,938	\$569,125	\$625,000
Taylor	Navajo	\$30,396	\$30,396	\$619,208	\$680,000
Wickenburg Municipal	Maricopa	\$130,775	\$130,775	\$2,664,068	\$2,925,618
Williams- H.A. Clark	Coconino	\$760,000	\$84,444	\$0	\$844,444
Williams-Gateway	Maricopa	\$1,650,339	\$754,339	\$13,085,322	\$15,490,000
Winslow-Lindberg Reg'l	Navajo	\$20,660	\$20,660	\$420,879	\$462,200
<b>Subtotal</b>		<b>\$6,281,587</b>	<b>\$1,586,335</b>	<b>\$22,227,245</b>	<b>\$30,145,143</b>
<b>Total FY 1999-2000</b>		<b>\$20,736,549</b>	<b>\$5,081,031</b>	<b>\$51,035,352</b>	<b>\$76,852,932</b>

Source: ADOT Aeronautics Division, Five Year Airport Development Program 2000-2004

## Federal Funds

The largest single source of airport development funds is the federal government. Through the FAA's Airport Improvement Program (AIP), airport development items such as land, runways, taxiways, and apron areas are eligible for 90 percent Federal participation at public use airports. The percentage of project costs for terminal development is 85 percent at commercial service airports. The balance of project costs are funded by local sources. In the 1997-98 fiscal year, Arizona was allocated \$47.8 million in AIP funds.

The source for AIP funds is the Aviation Trust Fund which is accumulated from all federal aviation taxes. These taxes include those on airline tickets, aviation fuel, lubricants, tires and tubes, aircraft registrations, and other aviation-related fees. The funds are then distributed under appropriations from Congress to airports included in the National Plan of Integrated Airport Systems. As reported in Element One, 58 airports in Arizona are included in the NPIAS. The act that authorizes the use of monies from the Trust Fund defines four categories of airports eligible for grant monies: (1) Primary Airports, (2) Commercial Service Airports, (3) Reliever



Airports, and (4) Other Airports. Arizona has ten primary airports, five non-primary commercial service airports, eight reliever airports, and 35 airports fall that into the Other Airports category.

Historical AIP funding at the national level is presented in Table 3-21.

**TABLE 3-21 ~ Airport Improvement Program: Grant Funding Authorizations 1988-1998**

Fiscal Year	Authorizations (millions)	Grant Total (millions)	Numbers of New Projects
1988	\$1,700.0	\$1,278.3	1,251
1989	\$1,700.0	\$1,279.3	1,258
1990	\$1,700.0	\$1,284.5	1,152
1991	\$1,800.0	\$1,670.3	1,404
1992	\$1,900.0	\$1,765.0	1,507
1993	\$2,025.0	\$1,829.8	1,434
1994	\$2,970.3	\$1,702.2	1,318
1995	\$2,161.0	\$1,418.2	1,047
1996	\$2,214.0	\$1,450.0	941
1997	\$2,280.0	\$1,460.0	1,066
1998	\$2,347.0	\$1,503.5	1,040

Source: Grant Funding Authorizations, Obligations Limitations, and Obligations

## State Funds

State monies for airport projects are also user-generated. Flight property tax now accounts for over 50% of the total state revenue. About 15 percent of the total revenue comes from aircraft lieu and taxes aircraft registration fees. The remainder of the revenue comes from an aircraft fuel tax, investment interest, and revenue of the state-owned Grand Canyon Airport. Table 3-22 shows the revenues for the state aviation fund for the past five years.

**TABLE 3-22 ~ State Aviation Fund Revenues**

REVENUE	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998
Flight Property Tax	\$12,278,607	\$13,783,627	\$18,564,298	\$17,679,764	\$7,582,939
Aviation Fuel Tax	\$690,752	\$254,630	\$512,328	\$514,687	\$485,333
Aircraft Lieu Tax	\$1,473,081	\$1,517,470	\$1,793,314	\$1,852,090	\$2,066,492
Aircraft Registration Fee	\$26,420	\$24,665	\$25,395	\$28,215	\$30,360
Airport Loans - Interest	\$0	\$0	\$107,263	\$133,835	332768
Airport Loans - Principal	\$0	\$0	\$343,802	\$320,865	404170
Misc. & Investment	\$1,080,365	\$1,410,326	\$1,895,329	\$2,613,848	\$2,507,355
<b>Total Revenue</b>	<b>\$15,549,225</b>	<b>\$16,990,718</b>	<b>\$23,241,729</b>	<b>\$23,143,304</b>	<b>\$13,409,417</b>
Percent of Increase/Decrease	7.34%	9.27%	36.79%	-0.42%	-42.06%
Grand Canyon Airport <sup>1</sup>	\$1,211,227	\$1,364,000	\$1,401,357	\$1,490,138	\$1,340,539
EXPENDITURES	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998
Total Administrative	\$714,508	\$803,580	\$727,342	\$746,980	\$931,026
Percent of Increase/Decrease	-1.51%	12.47%	-9.49%	2.70%	24.64%
Airport Loan Program					
Revenue Generating	\$0	\$0	\$3,250,000	\$972,000	\$0
Grand Advance	\$0	\$0	\$1,700,000	\$7,333,000	\$1,750,000
Total Airport Loans	\$0	\$0	\$4,950,000	\$8,305,000	\$1,750,000
AIRPORT DEVELOPMENT EXPENDITURES (State \$)	\$12,200,261	\$7,364,014	\$8,567,890	\$10,934,008	\$16,079,749
<b>Total Expenditures</b>	<b>\$12,914,769</b>	<b>\$8,167,594</b>	<b>\$14,245,232</b>	<b>\$19,985,988</b>	<b>\$18,760,775</b>
<b>Net Income / (Loss)</b>	<b>\$2,634,456</b>	<b>\$8,823,124</b>	<b>\$8,996,497</b>	<b>\$3,157,316</b>	<b>(\$5,351,358)</b>
Grand Canyon Airport <sup>1</sup>	\$7,465,590	\$1,880,233	\$1,382,363	\$1,458,984	\$4,105,229

Source: Arizona Department of Transportation, Aeronautics Division Progress Report; Unaudited Financial Records.

<sup>1</sup> Note: Grand Canyon National Park Airport revenues and expenditures are reported but are not included in the overall Aeronautics Division income/loss data.

## Summary

The information included in Element Three is provided to update the database developed for the SANS 1995. It has been collected to provide current data that can be used in the formation of the existing condition assessment of the system, the projected forecasts, and ultimately the necessary projects. Much of the data provided in Element Three relies on the information of others. Its accuracy is dependent on the accuracy of the research data provided.